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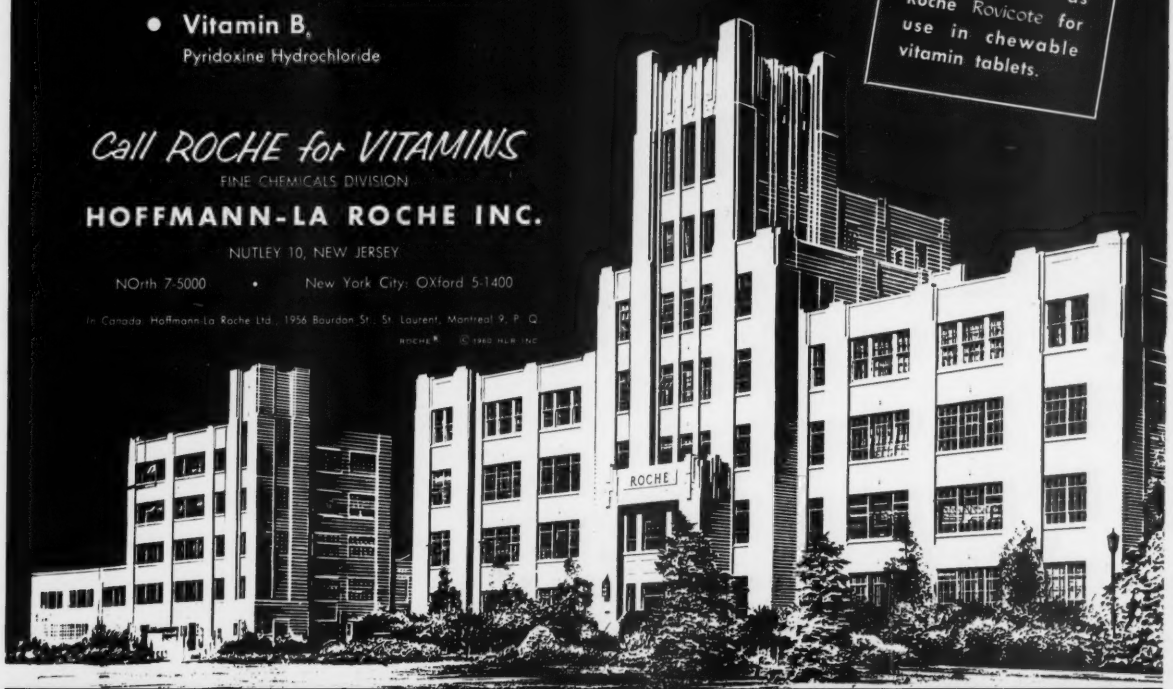

PURITY — QUALITY

Drug and Cosmetic Industry

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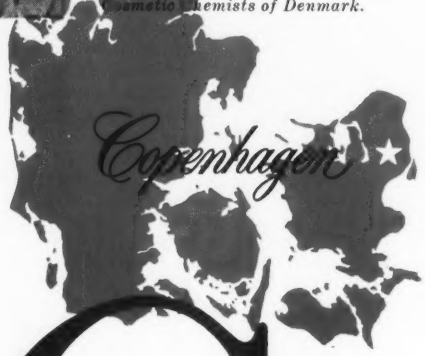
advertisement

SPEAKING FROM DENMARK

ERIK THOMSEN *is a native of Denmark. Since graduation in 1947 he has been employed with Danish soap and cosmetic firms. He is now manager of development and production with Breinings Laboratorium (Madsen and Wiese A/S), one of the oldest Danish cosmetic firms. He is present secretary of the Society of Cosmetic Chemists of Denmark.*



SPEAKING FROM SWITZERLAND

DR. R. HEILINGOTTER *is a graduate of the University of Gottingen, Vienna. He has specialized in hair-waving and hair-dyeing cosmetics since 1932. In recent years he has been chief chemist in a Netherlands plant and now practices as a scientist on hair-cosmetic researches at St. Blaise/ Neuchatel, Switzerland.*

REVIEW OF Glycerine IN HAIR PREPARATIONS

SHAMPOOS, RINSES, LOTIONS AND TONICS, RECONDITIONERS, FIXATIVES AND LACQUERS, DRESSINGS

by Erik Thomsen

SHAMPOOS. It is always desirable that shampooing be accomplished in such a way that the resulting hair is not left in a condition of fluffiness, caused by lack of adherence or static electricity. As the demand of the buying public is still for a good foaming shampoo, it has—as far as I have seen—not yet been possible to create a shampoo to be sold completely without that downy fly-away hair drawback. In any event, glycerine is considered by some to be a helpful aid. Powers mentions, "Glycerol helps retain moisture and delay evaporation. Addition in shampoo formulations keeps the hair softer and helps moisture retention." For other reasons, I find glycerine of great value as a shampoo ingredient. It can act as an aid in manufacture, as a clarifier or a bodying agent. I have to admit, that my experience regarding soap shampoos is of little value, because we in Denmark have very hard water, rendering the soap type shampoo unsatisfactory and not very popular. For the manufacture of liquid soaps, however, I know how useful glycerine is. If it is not already present in the product as a result of saponification of fats, it simply may be added. Practically all formulas for soap shampoos in the literature contain glyc-

(Continued on Page 2)

HEAT-WAVING, DYEING, REMOVING AND STRAIGHTENING

by Dr. R. Heilingotter

HEAT-WAVING. The incorporation of "oily" substances into heat-waving lotions is considered beneficial to the hair. In order to minimize hair damage by the action of heat and the alkalinity of heat-waving lotions and to overcome hair dryness, these preparations are often provided with suitable additions of glycerine, especially to those which are applied at higher temperatures. According to Sarensen (1) an addition of half per cent glycerine, especially for difficult to handle, coarse hair, is suitable as a softening medium:

Sodium sulfite	10	parts
Ammonium carbonate	8	"
Ammonia 26%	2	"
Glycerine	0.5	"
Water, to make	100	"

Glycerine serves also to give a desirable lustre to the finish of the hair after it has been treated with the permanent-waving liquid. For the same reason Janistyn (2) suggests the following formula for a heat-waving lotion:

(Continued on Page 3)

erine, which illustrates the necessity of its presence as a clarifier (solubilizer), an antifreeze, a thickener, perhaps a foam stabilizer—as well as a hair conditioning agent.

What has been said above regarding soap shampoos is valid also for soapless shampoos; there will always be a reason for the addition of glycerine to a shampoo. I have in my own practice successfully used it as a bodying agent and an antifreeze in a liquid shampoo for hair-dressers, and in a cream shampoo based on Sodium laurylsulphate (in an amount of circa 5%) to prevent granulation of the cream during storage.

RINSES. In the days of soap shampoo, a hair rinse was simply a solution of a weak organic acid, used to dissolve the deposit of lime soap that would otherwise leave the hair dull and without lustre. Today a hair rinse is used to bring about better setting properties of the hair, to prevent fly-away after-shampoo effect, and eventually bring about brilliance to the hair. To promote that, a modern rinse will have to contain a cationic agent, a humectant and some oily substance. It may be presented to the customer as a one-use-pack or in larger bottles. It will appeal most to the buyer, if it has a creamy appearance, looking more "nourishing" than the plain clear solution. It may be provided with a suitable dyestuff, making a color rinse. Here is a simple emulsion to be used as a starting point for further development:

HAIR RINSE

Ethoxy lauryl ether	5	Glycerine	4
Heavy white oil	16	Ethanol 96%	16
Laurylpyridiniumchloride	0.2	Water	58
Polyvinylpyrrolidone	0.8	Perfume to suit	

The mixed oil and emulsifier are stirred during slow addition of the water. When the emulsion is finished, add the rest, and finally the alcohol.

LOTIONS AND TONICS. The same role is played by glycerine in alcoholic lotions in building a moist film around each hair shaft. Here partial dehydration is often brought about by the plain alcoholic solutions of perfume. A humectant helps eliminate this. The amount of glycerine in alcoholic hair lotions (if containing vegetable extracts or drugs generally called tonics) may vary from 2-12%, increasing with the water content. If kept at a reasonable ratio to the water (not over 1:4) in the lotion there is no risk of making a too heavy and slowly penetrating preparation. Glycerine will make the hair soft, supple and brilliant. In certain cases it even will help in keeping the perfume in solution and the lotion crystal clear.

HAIR RECONDITIONING CREAMS. The defatting action of the modern shampoos and the more and more frequent practice of dyeing and waving treatments with serious consequences to the hair and the scalp have resulted in a still increasing demand for preparations with the capacity of restoring the hair qualities lost during the mentioned proceedings, as for instance lustre, suppleness and softness.

Usually reconditioning creams contain lubricants (petrolatum, mineral oil, fatty esters, etc.), body giving substances (fatty alcohols, waxes, spermaceti), nutrients (lanolin, lecithin, hair hydrolysates, linoleic acid), emulsifiers, and humectants such as glycerine. The following formula for a hair reconditioning cream, which is very easy to make, simply by stirring the two phases together at a temperature of 70° C, perfume, cool and pack, gives a rather stiff cream, which the hairdresser must dilute with water to a semifluid emulsion before applying it to the hair after shampooing or permanent waving.

NOTE: Inclusion of formulations in this series of articles does not constitute a recommendation by G.P.A.—nor warrant that they are free from patent or other legal restrictions.

Cetostearyl alcohol	20	Sodium laurylethoxy-sulphate	1.5
Hydrogenated sperm oil	2	Glycerine	5
Soya lecithin, extra light	1	Boric acid	0.5
White oil	3	Polyvinylpyrrolidone	0.5
Isopropyl linoleate	2	Water to make	100

Perfume, colour, preservatives q.s.

As the cream is intended to be rinsed out of the hair after having been in the hair as a treatment for about 15 minutes, the glycerine content is here kept as low as 7% of the water phase. At that level it is believed to have a good chance of penetrating into the hair shaft, remaining there after rinsing and exercising a softening, swelling and humectant action in the hair. Using too high a content of glycerine will result in reduced penetration.

Besides this "treatment" property of glycerine, it also adds to the keeping properties of the cream—which, as it will be used in hair dressing salons, probably will be packed in jars, and consequently be prone to drying.

FIXATIVES AND LACQUERS. The purpose of these two types of non-greasy hair dressings is the same, the difference principally based upon their way of application. While hair fixatives are applied to the hair before—and aiding in—the setting, the lacquers are sprayed onto the hair after the coiffure has been finished. Colloid substances are in both cases used as binders and film formers for the hair. In fixatives they are mostly gums, in hair lacquers shellac or resins, and as the hair lacquers must be sprayed, they must be of low viscosity, while the fixatives are of the gel-type or high viscous lotions.

Gums, shellac and resins are usually rather brittle substances, which have to be plasticized to avoid the unpleasant flaking of the film, which in bad cases looks like dandruff. Here again we can take profit with glycerine: as a plasticizer and softener for the film-building substance, as a conditioner for the hair, so it looks more supple and is easier to set, and as an aid in redissolving the film, either for resetting of the hair with a moist comb or in a desired removing of the film.

The hair fixative is a very nice semi-gel, easy to apply and really corresponding to its name of fixative:

High viscosity sodium alginate	9	Ethanol 96%	15
Glycerine	3.2	Perfume (water soluble), colour preservatives	q.s
Water, to make		100	

Disperse the alginate in alcohol and glycerine. Add the water and when smooth, the perfume. It is most convenient to fill it into wide necked bottles immediately after the mixing, as it gets pretty viscous in a couple of hours.

DRESSINGS. In the last decade, the old fashioned liquid brilliantines (consisting mainly of vegetable and mineral oil) have been outclassed by the cream-type hair dressings, principally manufactured as the well known borax-cold creams, the difference being a lower melting point of the wax-oil mixture and eventually addition of further emulsifiers. Such creams are virtually mixed-phase emulsions, with a tendency to drying when exposed to the atmosphere, so a glycerine addition will be of benefit for keeping qualities. Further it will be of aid in the manufacture of oil in water creams, manufactured with the modern synthetic polyglycol ether-emulsifiers.

Here is a formula for an oil-in-water cream, easy to spread, giving a nice lustre to the hair without being too greasy. The glycerine will, together with the emulsifiers, help re-emulsification of the fatty substances during shampooing, an advantage which is often missing in hair creams

and almost always absent in liquid brilliantines. The cream is suitable for packing into tubes, but because of the nonionic emulsifier, the preservative must be selected very carefully.

HAIR CREAM (dressing, grooming cream)

Stearic acid	6	Isopropyl myristate	12
Spermaceti	6	Light white oil	20
Glyceryl monostearate	2	Triethanolamine	0.8
Ethoxy lauryl ether	2	Glycerine	4.2
White petrolatum	6	Water, to make	100
Lanolin	2	Perfume, preservative	q.s.

Melt together the waxes and oils; mix the water phase. When both phases at a temperature of 70°, gradually pour water phase into oil-phase, while stirring slowly. Continue stirring till cool; add perfume at ca. 45°C.

(Continued from Page 1)

HEAT-WAVING, DYEING, REMOVING AND STRAIGHTENING
by Dr R. Heilingotter

Ammonium sulfite, 22° Be	1.0	Triisopropanol aminoleate, 25%	2.0
Ammonia, 0.910	20.0	Nekal	0.1
Glycerine 28° Be	2.0	Water, dist.	73.0
Polyethylene glycol	2.0		

The addition of glycerine to cold-wave lotions has not been found as necessary because of the self-softening action of the active ingredients of such solutions, but some home-wave lotions contain thioglycerine as active agent in alkaline medium. Glycerine, in this case, is used as raw material for the synthesis of the thio compound.

Recently, weakly acid or nearly neutral cold-wave lotions have been introduced. One of these preparations (3) uses thioglycerine without any addition of ammonia or another alkali, at a ph of 4 to 6. Thioglycerine can be prepared from glycerine-glycid (epichlorhydrin) and hydrogen sulfide or barium sulfide, according to Smith and Sjoeberg (4) or by Morell (5) from a mono-chlorhydrin with potassium sulfide or hydrogen sulfide.

Acid cold-wave lotions may also consist of mercaptan carbonic esters, containing at least one hydroxyl group in the molecule, at a ph of 4 to 7, according to Richter (6). In this case glycerine-monothioglycolic ester and/or similar other esters are used and glycerine is necessary as raw material to produce this compound.

A completely different way to produce heat-permanent waves eliminates electrical energy to obtain the curling effect together with usual alkaline heat-wave lotions by replacement of the electrical heat by chemical heat. Use is made of combinations of chemicals to give sufficient heat by chemical exothermal reaction, if moistened. Besides other combinations an oxidative reaction between permanganates and glycerine or other oxidizable substances, has been found as particularly effective. This has been described by Bonat (7) and Francis (8).

HAIR DYEING. Glycerine is often used in hair-dyeing preparations, for example, in a "Henna liquid shampoo" described by Jannaway (10):

Soapless shampoo base	20 to 30%	Lawsone, synthetic	0.08 %
Lactic acid	0.5 %	Alcohol	10.0 %
Glycerine	5.0 %	Water, to make	100 %

Glycerine has been of special importance to the manufacture of metallic hair-dyes. An addition of glycerine to hair restorers is usual to keep them humid during application. Creamy preparations of this kind are intended to provide an additional amount of glycerine, according to Jannaway (11):

Emulsifying wax	10 g.	10 g.		Copper chloride	0.5 g.	—	
Cetostearyl alcohol	5 g.	5 g.		Lawsone, synthetic	0.02g.	—	
Liquid paraffin	8 g.	—	g.	Indigo, soluble	0.1	—	
Glycerine	5 g.	6	g.	Water, dist.	68.0	75	g.
Lead acetate	3.4 g.	4	g.				

Modern oxidation hair-dyes are today mostly manufactured as cream or jelly in a consistency suitable for tube filling. The cream hair-dyes have been the first of this type and have been introduced on the market by Stroher (12). As a cream base, glyceryl monostearate has been used and many imitations utilize the same emulsifier, alone, or in combination with other fatty compounds able to form an emulsion. Glycerine is necessary to produce glyceryl monostearate. This emulsifier is not only in use to prepare cream oxidation hair-dyes but also to produce cream color rinses.

Liquid color rinses, which have the same duty, to give a light coloring effect to the hair, are prepared with addition of glycerine, conforming to a formula, given by Jannaway (13):

Chamomile extract	12.0 g.	Glycerine	2.5 g.
Rhubarb, conc. infusion	3.0 g.	Chamomile oil or compound	0.5 g.
Lawsone, solution 1%	2.0 g.	Water	80.0 g.

HAIR REMOVING. Glycerine is also used in depilatory preparations in appreciable amounts; they are mostly offered as cream products. Glycerine gives softness and suppleness, preventing drying during application to the skin. In general depilatories are not declared skin compatible preparations since they attack not only the hair, but also the skin, making it rough and brittle. Glycerine has to counteract this disagreeable, secondary effect. The following formulas, according to Winter (14), show that glycerine is useful in considerable amounts:

Strontium sulfide	30	27	Lanolin, anhydr.	—	8
Calcium sulfide	—	3	Glycerine	10	8
Calcium carbonate	15	—	Water	30	25
Gum tragacanth	—	0.3			
Starch	15	5		100	76.3

Also in the modern cream depilatories based on thioglycolates glycerine is used in appreciable quantities, as the formula of Keithler (15) shows:

Calcium thioglycolate	6%	Sea Kem Type 11	2%
Carbowax 6000	9%	Alcohol	5%
Glycerine	10%	Water	47%
Zinc oxide	20%	Perfume	1%

HAIR STRAIGHTENING. It is a fact that individuals with straight hair want curly hair and the individuals with curly hair believe straight hair to be more desirable. But to the great percentage of individuals with natural curly hair, hair straighteners have become today more and more important. An ancient method was that of plastering down the hair by the use of gums or resinous-fatty vehicles. Later on an alkali type of straightener came into use; these formulas contain glycerine:

Sodium hydroxide	4	10	Oleic acid	—	5
Glycerinmonostearate	16	—	Glycerine	5	5
Stearic acid	—	15	Water	75	65

In modern preparations, thioglycolates have been used for hair straightening. Such preparations contain 1 to 12 per cent thioglycolic acid; sufficient alkali, for example ammonia to form ammonium thioglycolate; an organic amine, such as ethanolamine to produce sufficient alkalinity; ingredients able to give viscosity and adhesion, such as alkylcellulose, alginates, polyvinyl alcohol, Carbowax and suitable other products (16). Another suggestion by Morelle (17) uses thiolactic acid together with a water soluble non-toxic alkali, jelly forming compounds and water. In both formulas an addition of glycerine seems to be desirable.

Bibliographies available upon request.

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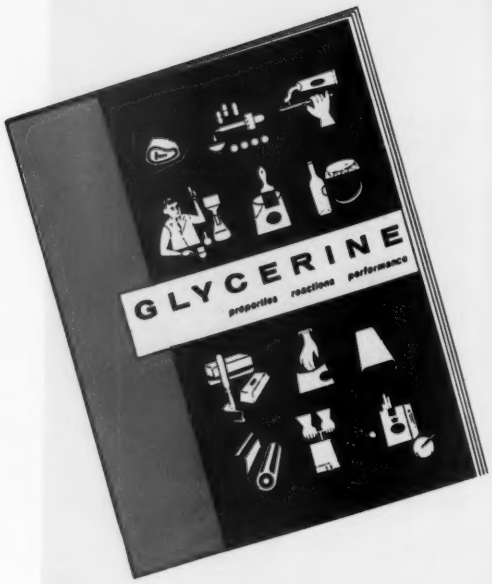
Entries will be judged by a committee of outstanding reputation and scientific background, having no connection with the Association or its members.

METHOD OF NOMINATION—Nominations must be made on the official entry blanks, which may be obtained by writing to: Awards Committee, Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

All nominations for the 1960 awards must be received by November 1, 1960, to be eligible.



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Keeping Posted

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Rexall Activity

The Rexall trademarked drugs and cosmetics number more than 2,300 different products. These are manufactured mainly in the company's St. Louis laboratories. Expansion of this operation during the past year has resulted in the greatest increase in production in the history of this plant. Productive capacity is to be further increased this year, especially in aerosol, tablet, and liquid manufacture. The company has 10,150 Rexall drugstore distributors in this country and 1,500 in Canada. Of the U. S. distributors, 174 are company-owned stores.

Of the company-owned stores, 129 are operated by Liggett Drug Company, and 45 by The Owl Drug Co. Liggett continues to open new stores in shopping centers in Florida, Alabama, and the New England states. In 1960 at least 12 new units will be opened. These new units will be offset by eliminating marginal stores, leaving the total number about constant. In the Fall of this year a store will be opened in a shopping center in Puerto Rico.

Eli Lilly Facts

Eli Lilly president, Eugene N. Beesley, told stockholders: "Our expenses for salesmen, plus the cost of our advertising, together account for approximately 6 cents of each dollar that the consumer spends for Lilly products. Of that 6 cents, 4 cents is required to pay for the service that is rendered by our salesmen. Two cents goes for professional journal advertising, direct mail promotion, and product samples."

With regard to research, Mr. Beesley said: "Lilly alone spent more than $18,000,000 on research last year and in the past ten years has allocated approximately $100,000,000 for these efforts. Our research and development resulted in the introduction of more than 70 new products in the past decade, each of which represented a significant advance in the treatment of disease."

Lilly's four objectives of its research prgram are:

(1) To make as many original discoveries as possible. We now have approximately 60 research teams working on all the major medical problems.

(2) To support research in universities and other institutions outside the company.

(3) To scour the globe for promising scientific leads and accomplishments of other scientists.

(4) To develop promising original discoveries into useful and safe medicines.

Mr. Beesley added: "A new drug discovered tomorrow is too late to save a life lost today. This might well describe the philosophy behind pharmaceutical industry research and development."

Fair Trade Bill Stopped

The Federal Fair Trade Bill seems to be stymied in the House of Representatives. Approved by the House Commerce Committee last May, and resting in the Rules Committee since then, it was tabled by the Rules Committee last month. The vote to table the bill was six to four with two abstentions. It appears that the bill is dead for this session.

Surplus Corn for Alcohol

A government plan to sell 30 million bushels of corn to fermentation alcohol producers at a price as low as 60 cents a bushel brought many vigorous protests. Secretary of Agriculture Benson has been studying the protests and reconsidering the matter. The synthetic alcohol producers described such a move as nothing less than a subsidy of the fermentation industry. They felt that 30 million bushels of corn—which would yield some 75 to 80 million wine gallons of alcohol, or about 75 per cent of a year's output—would just about wreck the market.

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Pharmacology Award

The Torald Sollman Award for Achievements in Pharmacology, consisting of a $2500 honorarium, a scroll and a medal, has been established by Wyeth Laboratories. The recipient of the award is to be chosen annually by a committee appointed by the president of the American Society of Pharmacology and Experimental Therapeutics. The award is to be given for "significant contemporary contributions to the advancement and extension of knowledge in the field of pharmacology." The presentation will be made during the Society's Fall meeting, and the recipient will deliver the Sollman Oration, covering his major contributions to pharmacology at the time of the presentation.

The award has been named for Dr. Sollman, a resident of Cleveland, in commemoration of his vital, pioneer efforts in furthering pharmacological investigation and education in the United States. The 86-year-old, who was the second professor of pharmacology in this country, is author of the standard English-language textbook in use today, *A Manual of Pharmacology*.

New Parke, Davis Products and Plants

Parke, Davis president, Harry J. Loynd, told stockholders that the company will introduce several new products this year, including Humatin for amebiasis and other dysenteries, Camoprim for malaria, a new form of polio vaccine, aluminum-absorbed, which will cut down the dose and prolong the effectiveness, and two or three other products.

Mr. Loynd announced plans for construction of a new empty-capsule plant in London, England, and said new facilities may be built at Karachi, Pakistan; Brazil; and Argentina. New branches will be completed or started this year in Dallas, Los Angeles, Baltimore, Cleveland, Memphis, and Winnipeg, Manitoba, while additional virus vaccine facilities will be built at Rochester, Michigan.

Loynd Heads P.M.A.

Harry J. Loynd, president of Parke, Davis, is the new chairman of the board of the Pharmaceutical Manufacturers Association, while Eugene N. Beesley, president of Eli Lilly and Company, is chairman-elect. Vice-presidents are John T. Connor, president of Merck Co., George R. Cain, president of Abbott Laboratories, and Kenneth F. Valentine, president of Pitman-Moore. Treasurer is S. Barksdale Penick Jr., president of S. B. Penick & Company.

Newly elected members of the board are Francis Boyer, Smith, Kline & French Laboratories; Robert K. Cutter, Cutter Laboratories; J. H. Fitzgerald Dunning, Hynson, Westcott & Dunning; Robert A. Hardt, Armour Pharmaceutical Company; Theodore G. Klumpp, Winthrop Laboratories; and John C. Zimmerman, Irwin, Neisler & Co. Continuing on the board are L. D. Barney, Hoffmann-La Roche, Inc.; George W. Bengart, Norwich Pharmacal Company; H. W. Blades, Wyeth Laboratories; Francis C. Brown, Schering Corporation; Michael Francis Charley, Standard Pharmacal Co.; Alfred E. Driscoll, Warner-Chilcott Laboratories; Lyman C. Duncan, Lederle Laboratories; Lee L. Gobson, Lakeside Laboratories; William B. Graham, Baxter Laboratories; D. Mead Johnson, Mead Johnson & Company; John E. McKeen, Chas. Pfizer & Co.; John G. Searle, G. D. Searle & Co.; George F. Smith, Johnson & Johnson; John J. Toohy, E. R. Squibb & Sons; E. Gifford Upjohn, The Upjohn Company.

Staff officers reelected are president, Austin Smith, executive vice-president and secretary, Karl Bambach, administrative vice-president, J. O'Neill Closs, and general counsel, John K. Worley.

Abbott's "What's New" in French

Abbott Laboratories is now publishing *What's New*—its publication to the medical profession—in a fifth language, French. Recently the first issue of *Abbotherapie* went to 31,000 French-speaking physicians around the world. Published by the international division of Abbott, it is being sent to physicians in Algeria, Belgium, Belgian Congo, Canada, Egypt, France, Greece, Haiti, Iran, Lebanon, Luxenbourg, Morocco, Saudi-Arabia, Switzerland, Syria, Tunisia, and Turkey.

Formula and content are similar to the other Abbott edtions printed in Italian, Portuguese, Spanish and English. There is also an Oxford English edition for the United Kingdom. *Abbotherapie* will be published four times a year.

Abbott Scientists Receive Awards

Six Abbott Laboratories scientists recently received awards for outstanding achievements. Board chairman Elmer B. Vliet presented certificates to Robert K. Clark, Jr., Clarance J. Endicott, Rodney P. Gwinn, Bruce W. Horrom, Thomas A. Prickett, and Richard U. Schook.

Clark was cited for antibiotic studies with actithiazic acid, erythromycin, streptomycin, and synnematin. His work led to improved production methods for penicillin V, heparin, erythromycin, and gibberellic acid.

Endicott played an important part in development of Gradumet, a form of sustained-release medication. In 1956 he also received an award for discovery and application of the Filtab coating process.

Gwinn, a physician in the medical department, is director of clinical investigation. His contributions to medical advances include a number in the fields of extracorporeal circulation and the isolated perfusion technique for cancer treatment.

In organic research, Horrom has contributed significant advances in analgesics, antiviral agents, muscle relaxants, and cycloprene chemistry.

Besides doing outstanding work in tablet studies,

Prickett has performed invaluable services in teaching and training colleagues and in solving tablet problems.

Schook, head of organic research, has made notable contributions to the fields of radioisotope pharmaceuticals, muscle relaxants, steroids and parasitic diseases resulting in many patents and publications.

SK&F Pharmacy News

SK&F Pharmacy News is a new publication which will be published eight times a year for the more than 53,000 retail pharmacies in this country. Frazier Cheston, director of distribution of Smith, Kline & French Laboratories, says that the publication "will take the pharmacist behind the scenes of SK&F's research effort and report company and trade policies. In addition, *SK&F Pharmacy News* will include articles on broad aspects of the pharmaceutical industry, as well as information on new techniques and methods which have been proven useful in the management of retail pharmacies."

Annual Plant Inspection 10 Years Off

U. S. Food and Drug Commissioner Larrick, appearing before the House Appropriations Subcommittee, said that he felt that the ultimate objective of the FDA is to inspect each plant at least once a year, but this will require 1,000 inspectors instead of the present 360. He thought it will take 10 years to reach this goal, and next year with 496 inspectors, each plant could be inspected each 4½ years.

Essential War Survival Items

The Office of Civil and Defense Mobilization, in a list of essential survival items required in an immediate postattack period "to sustain life at a productive level and to insure national survival" has included the following drugs among health supplies and equipment: Acetylsalicylic acid, alcohol, antibiotics, atropine sulfate tablets and injections, barbiturates, blood derivatives for shock therapy, cardiac and respiratory stimulants, digatalis and derivatives, general anesthetics, insulin, intravenous solutions for replacement therapy, local anesthetics, lubricant—surgical, morphine and substitutes, oral electrolytes, oxygen, surgical antiseptics, surgical detergents, sulfa drugs, synthetic plasma volume expanders, water for injections.

Also included are the following biologicals: antirabies serum, botulism antitoxin type A and B, cholera vaccine, diphtheria and tetanus toxoids and pertussis vaccine, gas gangrene antitoxin, plague vaccine, rabies vaccine, small pox vaccine, tetanus antitoxin, tetanus and diphtheria toxoid, tetanus toxoid A.P., typhoid and paratyphoid vaccine, Typhus vaccine epidemic, yellow fever vaccine.

U. S. Pharmacopoeia Officials

At the recent decennial U. S. Pharmacopeial Convention, Arthur C. DeGraff, M.D., was elected president; Theodore G. Klumpp, M.D. (president Winthrop Laboratories), vice-president; Adley B. Nichols, secretary; W. Paul Briggs, treasurer; George D. Beal, chairman board of trustees; members of board, George F. Archambault, Patrick H. Costello, Windsor C. Cutting, M.D., Paul L. McLain, M.D., Linwood F. Tice.

Industry scientists named to the 60-man General Committee of Revision are: M. E. Auberbach, Sterling-Winthrop Research Institute; R. H. Blythe, Smith, Kline & French Laboratories; G. C. Bond, The Upjohn Company; W. E. Bruce, Wyeth Institute for Medical Research; A. Q. Butler, Mallinekrodt Chemical Works; J. Cooper, Ciba Pharmaceutical Products; C. W. Ferry, Burroughs Wellcome & Co.; W. B. Fortune, Eli Lilly and Company; E. W. Gerwe, Eli Lilly and Company; C. L. Graham, The Upjohn Company; F. A. Marina, Parke, Davis & Company; P. J. McCall, Amour Pharmaceutical Company; J. W. Palmer, Hyland Laboratories; J. H. Spear, G. D. Searle & Co.

Listerine at New Peak

Based on first quarter 1960 sales of Listerine Antiseptic, Warner-Lambert Pharmaceutical Company officials are predicting that sales this year will peak 10 per cent above 1959, the best year to date. In 1959, they say, Listerine accounted for 60 per cent of the sales in the more than $60 million oral antiseptic market (upward of $36 million).

Listerine will be best remembered for its advertising for control of bad breath, or halitosis, as they taught the public to call it. The advertisements which started with "Even Your Best Friend Won't Tell You," and reached a peak with "Often a Bridesmaid, Never a Bride," are said to have been the exclusive inventions of a supercopywriter named Gordon Seagrove, who was induced by one of the Lambert brothers to quit his job as a calliope player in a circus and try advertising.

Since 1955, Listerine advertising has totaled 90 per cent of all the campaigns for oral antiseptics, with the result that in the last five years, Listerine has jumped forward another 215 per cent in sales.

Listerine toothpaste sales also have been far above expectations during the first quarter of 1960. Early sales predictions for the three-month period called for 1½ million tubes to be sold, but predictions were surpassed by 33 per cent.

Listerine is the same product formula-wise that it was when it was first marketed 81 years ago.

Minnesota Kills Fair Trade

Minnesota is another state in which the fair trade law has finally been declared unconstitutional. Slowly, but apparently surely, the number of states in which fair trade is not enforceable continues to grow. And with the proposed Federal law apparently dead for this session at least, the future of fair trade continues to become more bleak.

Italian Drugs for Armed Forces

The pharmaceutical industry appears to be open to all sorts of injustices so far as the government of this country is concerned. Not only is it being scandalized by the Kefauver hearings, but now it appears that the products of the industry for use by the Armed Forces are being bought in Italy where patents and trademark rights are completely ignored.

It seems very strange that our government can go abroad and buy products which were discovered in this country and which, in this country and in very many foreign countries, are protected by our historic patent laws, and which are produced by labor paid such low wages that they constitute a continuing threat not only to our standard of living, but to our very existence.

Cutter Charged with Illegal Discounts

Cutter Laboratories has been charged with quoting different prices to competing customers. The Federal Trade commission charges violation of the Robinson-Patman Amendment to the Clayton Act by Cutter granting service retailers a straight 15 per cent discount, as against the following scale of discounts for buyers in the pharmacy category: 5 per cent on invoices totaling $50 or more, 7.5 per cent on invoices totaling $25 to $49.99, and no discount on orders below $25. FTC points out that the result is that a service retailer get a 15 per cent advantage over a pharmacy where both purchase less than $25.

Cutter made the following statement: "The passing on of a manufacturer's savings resulting from quantity purchases results in lower costs to the consumer. We don't believe that by meeting competitive practices which have been current in the industry for over thirty years, by giving quantity discounts on our products, we are guilty of violating antitrust laws."

The FTC admits that it will have to be shown that service retailers and pharmacies are in competition with one another, in order to sustain the charge.

Over-the-Counter Pharmaceuticals

Over-the-counter pharmaceuticals, that is relatively new products advertised only to the professions, are relatively few in number, Charles B. McDermott, vice-president of Winthrop Laboratories, recently told St. John's University Pharmacy Congress. These are the type of preparations which retail pharmacy has fought when the motion was made by the manufacturer for the Food and Drug Administration to take them off the "prescription only" list .

From 1955 to 1959, only 27 medicinals were transferred from the prescription category to the over-the-counter status, said Mr. McDermott. According to their therapeutic indications they were: three athlete's foot remedies; three cough preparations; one antacid; three antihistaminics; two topical anesthetics; one burn remedy; one hemorrhoidal preparation; one motion sickness preparation; three analgesics; one hay fever product; one nasal decongestant; two dental preparations; two new topical uses for neomycin; and one spray bandage.

Three of these products were added to the o-t-c list in 1958, and three in 1959.

During 1959, the retail gross volume of o-t-c pharmaceuticals amounted to approximately $500 million, according to Mr. McDermott. If distributed equally among the country's 53,000 pharmacies, the share of each would be about $9,000. Naturally store managements differ and some stores get far more or less of this average than their share. The pharmacies receiving the major share of this business recognized the following facts, said Mr. McDermott: These are exclusively retail pharmacy items; they are quality products proven to be effective and safe; their unit dollar sale generally exceeds that of the average front-store sale; the profit is generally greater than that of the usual front-store sale; they afford the pharmacist an opportunity to render personal service to his customers by application of his personal knowledge; all serious manufacturers guarantee the sale of their products to the retailer.

Toll-Free Telephoning for Doctors

Believed to be the first such application of long distance telephoning in the world, Frank W. Horner Limited, a pharmaceutical manufacturer of Montreal, Canada, last month introduced Mediphone, an exclusive toll-free long distance telephone system through which physicians may obtain various data on the use of Horner drugs when the information is required with a minimum of delay. Now available to some 2,000 English-speaking physicians in parts of Eastern Canada, the service will probably be extended to all physicians in Canada if its value is proved. Mediphone, according to Horner, could be the forerunner of a national telephone system for medical communication with all pharmaceutical firms in Canada. Presently, the service operates live on week days from 8:30 A.M. to 5:00 P.M. Eastern Time, and uses a recording unit to take calls outside of these hours for action the next working day.

The service is manned by medical, technical sales, and other laboratory personnel. The doctor may talk to the medical department, research director, a pharmacologist, biochemist, or any other specialist best suited to answer his question. He may even discuss his problem with several such specialists at the same time through Mediphone's internal conference phone circuit.

It is felt that Mediphone will keep Horner currently aware of just what product uses and problems should be amplified to all physicians, and that this source of constant "feed back" should alert the company to present such information to the profession much sooner. It is also believed that this benefit, together with reduction in correspondence and demands on

the company's field force, will make Mediphone attractive from a cost standpoint. The company says that by October it will be known whether or not Mediphone will be extended nationally. Frequency of use will be the determining factor.

Cosmetic Sales Set New Record

Sales at retail of cosmetics and other toilet preparations, excluding toilet soaps, for 1959 are estimated by the Toilet Goods Association at a new record high of $1,662,200,000, up approximately 9 per cent from the 1958 figure of $523,700,000. The increase was spread pretty generally throughout the list of toilet goods, according to the T.G.A., with spectacular increases taking place in a few classifications in which retail sales never have been very high. As an example, eye makeup sales were up very sharply, but this classification has never accounted for any substantial percentage of the industry's volume.

Dentifrice sales increased slightly more than 3 per cent, a more normal rate than that of the several spectacular years. Shaving cream sales were up nearly 5 per cent as the result of the sharp increase for aerosol products. The T.G.A. says that "it would appear that the balance between electric shavers and other types has now been substantially stabilized and there is no reason to expect at this moment that electric shavers will cut further into the market for shaving preparations."

Sales of lipsticks continued to increase at a little more than the rate for the entire list. Hair preparations did not increase quite as rapidly as the entire list because of changing styles although hair coloring preparations showed steady and substantial growth. Sales in department stores, according to the Federal Reserve Bank statistics increased only at about half the rate of the entire market and this class of stores declined percentage-wise from 19.2 per cent in 1958 to 18.1 per cent in 1959. Sales in drug stores also declined percentage-wise but the rate of decline was somewhat lower and apparently the efforts being made by the retail and wholesale drug associations to maintain their share of the cosmetic market are bearing fruit. Food stores sales again increased but the rate of increase appeared to be leveling off. The same may be said of house-to-house sales. There was also an increase percentage-wise in sales through the limited price variety stores, attributable, it is believed, to the trading up tendency of these outlets.

SALES PERCENTAGES THROUGH VARIOUS TYPES OF OUTLETS

	Chain & Independent Drug Stores	Dept. & Specialty Stores	Food Stores	House-to-House	Ltd. Price Variety Stores	All Other Outlets
1950	37.0	27.0	6.1	14.0	11.0	4.9
1951	36.0	25.5	8.5	16.2	10.0	3.8
1952	34.5	22.0	14.0	17.5	8.5	3.5
1953	32.0	22.1	15,5	18.3	8.4	3.7
1954	30.2	22.5	17.1	19.4	7.5	3.3
1955	29.4	22.3	17.9	20.0	7.3	3.1
1956	29.3	21.6	19.1	19.6	7.2	3.2
1957	28.6	20.6	20.3	19.7	7.3	3.5
1958	27.1	19.2	22.3	20.0	7.9	3.5
1959	26.8	18.1	22.9	20.5	8.4	3.3

RETAIL SALES—PERFUME, COSMETIC & TOILET PREPARATIONS
As Estimated by T.G.A. (Toilet Soaps Omitted)

Year	Sales in Millions of Dollars	Year	Sales in Millions of Dollars
1914	39.8	1937	374.0
1915	45.0	1938	412.3
1916	71.5	1939	425.1
1917	95.4	1940	449.9
1918	103.7	1941	463.6
1919	116.5	1942	481.4
1920	129.5	1943	507.5
1921	126.0	1944	593.0
1922	147.3	1945	711.3
1923	194.6	1946	758.2
1924	220.3	1947	743.8
1925	256.4	1948	749.8
1926	300.2	1949	770.8
1927	329.7	1950	840.1
1928	355.2	1951	912.8
1929	378.4	1952	1,004.0
1930	336.2	1953	1,020.8
1931	297.1	1954	1,086.8
1932	288.4	1955	1,192.2
1933	300.3	1956	1,321.0
1934	324.4	1957	1,430.7
1935	322.1	1958	1,523.7
1936	336.5	1959	1,662.2

Merck & Co. Business

Reporting lower sales and earnings for the first quarter of 1960, compared with 1959, Merck & Co. president John T. Connor said that "Continuing declines in prices for many of our bulk chemicals and rapid emergence of products competitive with our recent pharmaceutical product developments are prominent characteristics of our 1960 operations to date." He said that groups now selling at lower prices than early last year include diuretics, Salk polio vaccine, and other important biologicals, steroids, vitamins, and antibiotics.

Executive vice-president Henry W. Gadsden said that intense competition had followed Merck's successful development and introduction of Diuril, and that there are now "throughout the world literally dozens of imitative brands." The protection afforded by a patent is only part of the story, because patents can be useful to competitors, he continued. "Competitors have a roadmap before them that indicates the area they want to reach, what part of the area is already occupied, which roads are blocked off, and, more importantly, which roads are not."

Sales of One Day—Almost Two Years

John G. Searle, president of G. D. Searle & Co., told the stockholders of that company that sales for the first day of April, 1960, were one and three-quarters times the total business for 1923, the year he joined the company.

A. H. Robins Builds in Canada

Construction began in Montreal April 15 on a new manufacturing plant and research laboratory for the A. H. Robins Co. of Canada. Cost of the building, including land, will be about $700,000. The 36,000 sq. ft. structure is expected to be ready for occupancy in the fall of 1960.

The new plant will feature air conditioned packaging facilities with ample space for additional operations in the future.

DRUG AND COSMETIC OPERATIONS 1959

BY JOSEPH KALISH, Ph.D.

This compilation, as in past years, is made solely from data published in annual reports issued by publicly owned companies to stockholders. The first tabulation includes those diversified companies whose sales and profits include more than drug or cosmetic sales alone. Where breakdowns are given or indicated in the reports, sales figures are included in the appropriate pharmaceutical or cosmetic table or both. Pharmaceutical figures are for proprietary and ethical operations combined.

Totalling only sales included in the tables, pharmaceutical sales were 8.5 per cent greater in 1959 than in 1958 while cosmetic sales increased by 12.8 per cent.

Among cosmetic companies, only Avon earnings were more than 10 per cent of sales, but this rate of return was common among pharmaceutical manufacturers. Parke, Davis net earnings were 16.2 per cent of sales, Eli Lilly earned 12.5 per cent, Upjohn 14.8 per cent, Smith, Kline & French 18.5 per cent, Abbott 10.6 per cent, Schering 14.7 per cent, Norwich 12.7 per cent, Searle 21.2 per cent, U. S. Vitamin 13.3 per cent, Rorer 14.6 per cent.

Abbott Laboratories sales in 1959 increased by 5.2 per cent, earnings by 0.9 per cent and research expenditures were $6.9 million, an increase of about 20 per cent from 1958. Capital expenditures in the past year totaled $10.3 million, mainly for improvements in domestic facilities. The new research center doubles the space available for the Scientific Divisions, now comprising a staff of more than 750.

American Cyanamid Company sales were 11 per cent better than in 1958, profits 19.3 per cent better. Research and development expenses increased to $26.1 million from the previous $23.4 million and expenditures for capital additions were $35.5 million. A new antibiotic, Declomycin, was introduced in 1959 and large-scale trials of the Cox vaccine were under way. Sales of Diamox declined materially.

American Home Products Corp. gross sales included 44 per cent or $198.4 million by the ethical drug division, 24 per cent or $108.0 million by the packaged food division, 15 per cent or $66 million in foods, and 17 per cent or $73 million in household products.

Avon Products, Inc. maintained its position as top cosmetic company by a sales increase in 1959 of 18.1 per cent to $141.9 million, with net income increasing by 34.1 per cent to $14.4 million. The company has entered seven foreign markets in the past six years.

Baxter Laboratories, Inc. 1959 sales increased by 16 per cent, net earnings by 32 per cent. Research and development expenses were $1.5 million, 20 per cent more than in 1958, and will be increased 27 per cent to 1.9 million for 1960. Flint, Eaton & Company and Fenwal Laboratories, Inc. were acquired in 1959 for

PHARMACEUTICALS, COSMETICS, CHEMICALS, ETC.
(In Thousands of Dollars)

	1959				1958			
	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income
Procter & Gamble Co. (June 30)	1,368,,532	864,228	337,768	81,698	1,295,163	824,992	317,047	73,197
Olin Mathieson Chem. Corp.	702,032	476,852	111,845	37,416	601,398	421,346	109,258	9,383
American Cyanamid Co.	583,575	288,190	147,310	52,284	525,076	271,668	136,352	43,841
Colgate-Palmolive Co.	581,982	——	——	25,287	534,047	——	——	21,166
American Home Products Corp.	423,479	157,149	164,391	46,662	377,991	146,231	141,418	42,436
Lever Brothers Co.	409,600	—— 320,400 ——		15,200	382,600	—— 306,800 ——		10,100
Johnson & Johnson	371,832	216,772	107,348	19,715	324,190	192,351	91,353	15,054
Chas. Pfizer & Co., Inc.	253,673	125,119	95,502	24,863	222,726	105,916	82,410	23,965
Rexall Drug Co.	227,016	137,592	67,160	8,753	182,371	108,531	58,440	6,305
Merck & Co., Inc.	216,913	89,235	79,530	29,988	206,636	86,703	71,460	27,718
Sterling Drug, Inc.	209,248	76,152	91,888	20,990	197,790	73,921	87,306	19,149
Warner-Lambert Pharm. Co.	190,660	66,872	84,760	16,409	176,958	61,538	76,652	15,034
Bristol-Myers Co.	131,544	33,526	82,597	8,889	113,870	31,327	73,780	7,235
Vick Chem. Co. (June 30)	115,228	54,620	37,377	12,157	107,043	52,286	34,315	10,070
Miles Laboratories, Inc.	72,189	—— 60,865 ——		4,398	62,646	—— 52,767 ——		4,002
Lehn & Fink Prod. Corp. (June 30)	32,625	—— 29,238 ——		1,317	30 464	—— 27,838 ——		1,080
Nestle-Le Mur Company	13,869	—— 12,372 ——		678	12,608	—— 11,372 ——		549

PHARMACEUTICALS
(In Thousands of Dollars)

	1959				1958			
	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income
American Home Products Corp.	306,700				269,000			
Parke, Davis and Co.	191,527	60,971	70,163	30,961	172,583	58,156	62,168	28,041
Eli Lilly and Company	187,010	—— 141,239 ——		23,446	180,471	—— 132,755 ——		23,675
Sterling Drug, Inc.	180,735				167,784			
Upjohn Company	156,914	40,215	69,728	23,224	146,136	39,365	64,366	20,043
Smith Kline & French Labs.	134,891	37,007	47,325	25,006	124,066	36,786	42,869	20,805
Merck & Co.	132,300				111,600			
Bristol-Myers Co.	128,124				110,568			
Abbott Laboratories	122,602	49,212	47,982	12,989	116,598	45,497	45,542	12,873
Warner-Lambert Pharm. Co.	114,443				110,873			
Olin Mathieson Chem. Corp.	106,600				109,200			
Vick Chem. Co. (June 30)	98,900				87,200			
Schering Corp.	80,558	17,469	46,500	11,864	75,180	16,363	38,837	12,454
Chas. Pfizer & Co., Inc.	71,028				74,613			
Miles Laboratories	68,580				59,388			
Mead Johnson & Co.	59,667	24,668	26,173	5,501	57,435	24,093	23,810	4,696
Norwich Pharmacal Co.	40,669	8,802	20,869	5,148	37,152	9,303	18,380	4,346
G. D. Searle & Co.	34,509	10,782	8,854	7,298	32,667	9,803	8,560	6,972
Plough, Inc.	34,022	15,285	13,602	2,657	31,517	14,465	12,728	2,305
Allied Laboratories, Inc.	30,164			1,998	30,707			2.077
Baxter Laboratories, Inc.	29,154	16,340	9,335	1,835	25,507	14,284	7,396	1,394
Cutter Laboratories	21,315	11,601	7,736	979	18,753	10,171	7,110	742
U. S. Vitamin & Pharm. Corp.	14,866	5,104	6,455	1,978	14,493	5,217	6,163	1,807
Noxzema Chem. Co.	14,403	—— 12,884 ——		781	11,787	—— 9,794 ——		909
Wm. H. Rorer, Inc.	9,025	2,023	4,174	1,315	6,617	1,671	3,153	831

11,693 and 21,720 shares of Baxter stock, respectively.

Bristol-Myers Company sales were 15.5 per cent greater in 1959, net earnings increased by 22.9 per cent. Sales of ethicals increased from $20.3 million to $27.6 million, while proprietary sales, including Clairol in 1959, increased from $90.3 million to $100.5 million. The purchase of Clairol involved the cash expenditure of $15.0 million with additional payment of up to $7.5 million, depending upon sales, to be made by 1969. Research expense in 1959 was $6.25 million, about 20 per cent greater than in the preceding year.

Chesebrough-Pond's Inc. sales in 1959 reached a new high 11 per cent above 1958 sales, while earnings, exceeding $4.0 million, were 13 per cent ahead of the previous year. The Prince Matchabelli operation increased sales by 23 per cent and the Aziza Corporation was acquired in 1959. The research department increased its technical staff by 50 per cent.

Helene Curtis Industries, Inc. ended its 1960 fiscal year with record earnings. For the years ending February 28, 1960 sales were $48.1 million, compared with $47.3 in the preceding year, while respective earnings were $2.5 million and $1.8 million. Figures do not include sales and earnings of the new subsidiary, Studio-Hollywood, Inc., acquired after the close of the fiscal period.

Cutter Laboratories research expenditures exceeded $1.0 million in 1959 and are budgeted at more than $1.25 million in 1960. In the first quarter of 1960, sales aggregated $5.4 million, an increase of 14 per cent over the first quarter in 1959, while profits of $229,000 represented a 35 per cent increase.

Johnson & Johnson consolidated domestic sales and earnings for 1959 were the highest in the company's history; sales were 14 per cent and earnings 22 per cent ahead of 1958. McNeil Laboratories and Cilag-Chemie A.G. were acquired during the year as part of the ethical drug diversification policy.

Lehn & Fink Products Corporation. Tussy and Dorothy Gray Divisions both attained record sales volumes in the year ended June 30, 1959. For the nine months ended March 31, 1960, sales were $25.5 million, a 4 per cent increase over sales in the corresponding period of the previous year. For the same comparison periods, net earnings of $1.1 million were up by 6.9 per cent.

Eli Lilly and Company net sales for 1959 were second highest in the company's history, but net earnings declined slightly from the preceding year. Research expenditures reached $18.0 million, an increase of more than $2.0 million, with an even larger budget adopted for 1960. The company signed an agreement with the Syntex Corporation to share the cost of Syntex research and to conduct clinical investigation of promising new compounds.

Mead Johnson & Company net sales for 1959 increased by 3.9 per cent over 1958, while profits increased by 17.1 per cent. Research expense for 1960 will be $3.5 million. Professional research personnel has quadrupled since 1952.

Merck & Co., Inc. sales for 1959 increased by 5 per cent, while profits were 8 per cent greater. Diuretics, steroid hormones and vitamins accounted for 61 per

cent of total sales and research expense was $18.6 million. In the first quarter of 1960, sales of $55.8 million represent a decline of 0.5 per cent from the same quarter of 1959 while income declined from $7.9 million to $7.4 million.

Miles Laboratories, Inc. sales in 1959 comprised 84 per cent home remedies, 11 per cent pharmaceutical products, and 5 per cent chemicals. Sales of Alka-Seltzer increased over the preceding year but dropped in relative importance in world-wide sales from 60 per cent in 1958 to 56 per cent in 1959. One-A-Day Vitamins accounted for 23 per cent of consolidated sales in 1959 as against 19 per cent for 1958. These percentages correspond to sales in 1959 of $40.4 million for Alka-Seltzer and $16.6 million for One-A-Day Brand Multiple Vitamins.

The Norwich Pharmacal Company sales volume increased by 9 per cent, while net income was 18 per cent greater than in 1958. Major expansion of the research laboratories has begun and the building addition, two and one-half times the size of the present building, will be completed in 1961.

Olin Mathieson Chemical Corporation Squibb Division sales were $106.6 million compared with $109.2 million in 1958 and $104.9 million in 1957. Research and development expenditures by Squibb in 1959 were the highest in its history; construction of a $2 million packaging plant in New Brunswick is scheduled for completion during 1960.

Parke, Davis & Company 1959 net sales increased 11 per cent and net earnings rose 10.4 per cent. In the next five years, capital expansion expenditures are expected to reach $60 million, with $18 million to be spent in 1960. Research and product development expense was $9.5 million in 1959, compared with $8.4 million in the preceding year.

Chas. Pfizer & Co., Inc. sales were up 14 per cent while net earnings increased by 4 per cent over 1958. The company spent $30.3 million to improve and expand plants and laboratories while research expense reached $13.7 million. Sales of various divisions, comparing 1959 with 1958, were $55.8 and $60.1 million for Pfizer Laboratories, $15.2 and $12.4 million for Roerig, $17.8 and $16.7 million for Agricultural sales, $50.7 and $44.5 million for Chemicals, and $114.2 and $86.9 million for Pfizer International.

Plough, Inc. sales for the first quarter of 1960 were estimated at $9.5 million, compared with $8.0 in the corresponding period of 1958, while net earnings increased from $590,000 to $690,000.

Revlon, Inc. increased 1959 sales by 13 per cent and earnings by 12 per cent . An additional profit of $2.6 million was made by sale of some of the company's holdings of Schering stock. Holdings of Schick, Inc. are now 320,270 shares, or 26.7 per cent of the total. Revlon acquired in 1959 Bressard Distributors, Inc., AsthmaNefrin Co., and Pinex Co. Physical space occupied by the research laboratories has been increased by 25 per cent.

William H. Rorer, Inc. sales in 1959 were 36.4 per cent greater than in 1958, while net income increased by 58 per cent. With 37 new detail men added in 1959, the total sales force now numbers over 200. Research activities have increased, although no new products were offered during the year.

Schering Corporation corticosteroid sales account for about 30 per cent of company sales volume and the International Division accounts for approximately 22 per cent of total sales. Research expenses were $8.0 million, almost 10 per cent of sales, compared with $6.4 million in the preceding year.

G. D. Searle & Co. sales for the first quarter of 1960 were 12.8 greater than in the same period of 1958 while net earnings were also 12.8 per cent better. Two products, Mornidine for control of nausea, and Aldactone, a steroid diuretic, were introduced in 1959 and the price of Nilevar was reduced significantly.

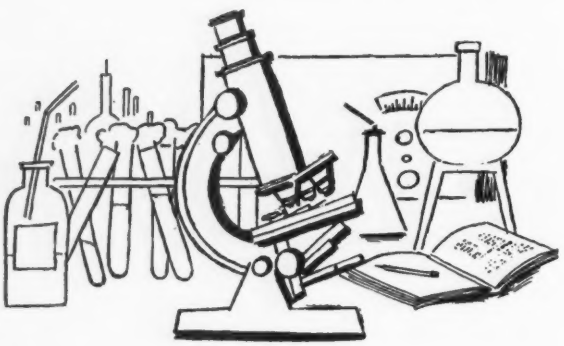
(Continued on page 706)

COSMETICS
(In Thousands of Dollars)

	1959				1958			
	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income
Avon Products, Inc.	141,905	52,095	59,175	14,395	120,111	47,237	50,796	10,734
Revlon, Inc.	124,940	50,331	52,995	10,837	110,363	44,598	46,180	9,688
Chesebrough-Ponds, Inc.	66,314	25,383	33,866	4,030	59,368	21,869	30,870	3,568
Max Factor, Inc.	53 229	———	———	3,725	45,071	———	———	2,802
Helen Curtis, Inc. (Feb. 28)	47,295	21,854	22,087	1,804	48,827	23,050	24,905	502
Shulton, Inc.	43 707	—— 36,169 ——		3,754	37,280	—— 30,505 ——		3,403
Warner-Lambert Pharm. Co.	37,650	———	———	———	34,418	———	———	———
Helena Rubinstein, Inc. (June 30)	27,230	—— 24,087 ——		1,425	25,139	—— 23,193 ——		911
Coty, Inc. (June 30)	22,679	9,361	13,244	103	22,009	10,427	12,340	782 Loss
Lanolin Plus, Inc. (June 30)	12 297	5,353	5,485	479	7,629	3,094	4,725	900 Loss
Hazel Bishop, Inc. (Oct. 31)	8,672	———	———	102	9,227	———	———	353 Loss
Bourjois, Inc. (Apr. 30)	———	———	2 913	477	———	———	2,941	422

THE SCIENTIST'S STAKE IN THE KEFAUVER HEARINGS*

BY MAX TISHLER, P.h.D. PRESIDENT, MERK SHARP & DOHME RESEARCH LABORATORIES



You are aware of the preoccupation of the Kefauver Committee with the pharmaceutical companies, initially to investigate something called administered pricing, and subsequently expanded into charges of collusion, price gouging, unfair advertising, and other abuses.

The Cost of Research

It is not my purpose to comment on the Kefauver charges of exorbitant prices of drugs to the public. However, there is one part in the industry's story to Congress on drug costs which directly concerns research, namely, the cost of doing research and the quality of industry's research.

Research and development expenditures in the drug industry were reported to be about $190,000,000 during 1959, and are estimated to exceed $200,000,000 during 1960. The cost of doing this research and development must be paid out of income, for industry has no endowment or endless cornucopia of wealth. This simple fact of economics is not a serious issue of the Kefauver Committee, but during its hearings charges have been made on a number of occasions that research done by our pharmaceutical industry is negligible and tainted. Allegations also have been made by some witnesses that most of the important discoveries in medicinals were made in foreign countries or in nonindustrial laboratories, and not in the laboratories of the American pharmaceutical companies. Far from leading in drug research, it is alleged that the American pharmaceutical industry has usually followed, and often only after a definite lag. The critics go on to claim that much of the laboratory work done by the pharmaceutical companies is centered on exploiting and marketing foreign discoveries.

These charges have been demoralizing to those of us who have devoted our lives to research in the pharmaceutical industry. Suddenly, our scientific dedication and motives are challenged. We are dismissed in a manner that makes us appear as charlatans—unscientific, and undedicated.

Our Ethics Are Impugned

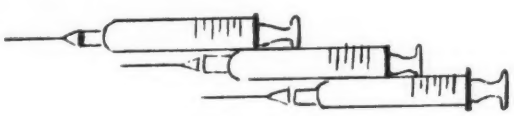
I am led to a point of indignation because of the unfair criticism of people whom I know to be dedicated, sincere scientists whose motives are actuated by the impelling desire to help mankind. When our ethics, purpose, and accomplishments are impugned, then I, as a man of science, have not only the right but the responsibility to speak out for the facts. This duty transcends all commercialism! As a member of the nation's scientific community and as a spokesman for the scientists in the pharmaceutical industry, I must vigorously protest against the irresponsible and degrading criticisms leveled at us.

I speak from my own experience with scientific people in my own company who are earnestly looking for new and better ways to treat *maladies* and not to create *markets*. Our scientific people recognize that our research is supported from the income we make, and yet they have come to our laboratories from the universities with the conviction that our methods of "objective research" provide the best opportunities for the conquest of diseases through drug therapy. Basically, within Merck & Co., with which I am most familiar, our research programs are selected by our research people. The manner in which we prosecute our research and the decisions needed in its operations rest essentially within the research organizations. Although our programs of research are approved annually by top management, I can say with complete honesty that never has a research proposal of any magnitude sponsored by our research organization been significantly altered or refused by management or by marketing considerations. It is the people in Merck's research—the chemist, the biologist, the pharmacologist, and the physician in charge of clinical research—who discover new drugs;

*Presented at the Honor Scroll Dinner, New Jersey Chapter, The American Institute of Chemists, in Newark, N. J., April 1960.

who determine through objective experimentation whether a drug is effective and safe; who decide whether a drug is a worthwhile contribution to the armamentarium of the physician; who conclude whether it is medically suitable for marketing; who judge when it is ready for marketing consideration; and who dictate what can be said to the practicing physician. These are the responsibilities given to the Research Division by our top management. If a drug does not measure up to the high standards of good medicine, we in research must take the blame entirely.

Actually during the ten-year period from 1949 to 1959, the Merck Sharp & Dohme Research Laboratories spent $111,000,000 for research. There were years in this period when we did not offer to our marketing organization a single new basic compound for distribution. This was our situation, in spite of the number of promising compounds that were being studied in the clinics after long periods of research in the laboratories. When the clinical data for these promising compounds were examined by our medical research people, we concluded that none of these met our standards and concepts of a drug with distinction.



A Review of Accomplishments

In reviewing some accomplishments of the past 25 years and reminding our critics to count their blessings, let me quote from a paper which appeared in the *Journal of the American Medical Association* during 1956, written by Dr. L. H. McDaniel, then Chairman of the Section of General Practice of the American Medical Association. In reviewing his 33 years of medical practice, Dr. McDaniel stated:

"I remember the reluctance with which I viewed the approaching winter, for I knew that before spring fifteen patients, including several close friends, would die from pneumonia. . . . Then we felt helpless, but today, we can walk into the sickroom with confidence, knowing that often a little ampule or vial the size of one's thumb contains drugs that can conquer diseases formerly thought hopeless."

It was not so long ago that the many infectious diseases in addition to pneumonia struck mortal fear within us. Some of us can remember when tuberculosis meant a lingering doom; when septic peritonitis was common and fatal; when bacterial endocarditis was certain death; and when all forms of bacterial meningitis and septicemias were spoken of with fervent prayers. It wasn't so long ago that our knowledge of nutrition was very meager; when pellagra was not uncommon in our country; when pernicious anemia was a killer; when the terms beri beri, scurvy, and rickets were part of the layman's vocabulary. Today, our medical students learn of most of these deficiency diseases, not from the clinics but only from textbooks.

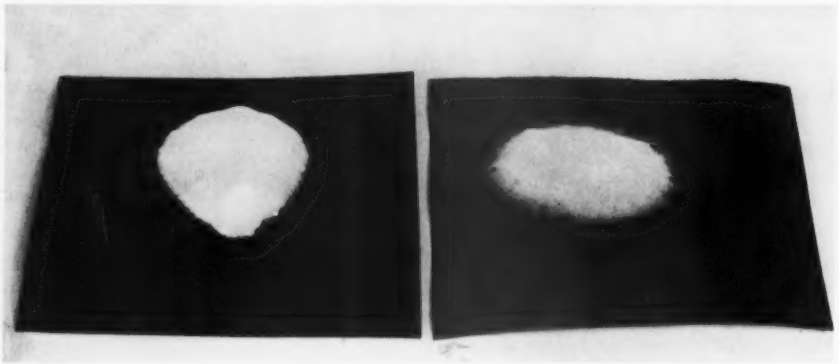
Prior to the early Thirties, the American pharmaceutical companies were enlarged apothecary shops which, in contrast to their European counterparts, did little of what we now call research. In fact, most of the important drugs used in America up to 1935 were the result of research in foreign laboratories. Today, the situation is significantly reversed. The productivity of our research laboratories has profoundly affected medicine in every country. In world affairs, the American pharmaceutical industry has become one of our greatest resources of good will.

Modern research in the American pharmaceutical industry really began in the decade commencing with 1930. During this period, Parke Davis, Merck, Lilly, Abbott, and Squibb established research organizations with new concepts and dimensions. They brought together under a single roof scientists of many disciplines, all needed to carry out programs of research from the conceptual stage through clinical evaluation. Men and women of different training—chemists, pharmacologists, pathologists, and physicians—joined together for the first time in seeking solutions to medical problems. This was a new concept of research in our country, for until then research was reserved for the individual investigator in the university and the institute, often isolated and, because of this, frequently ineffective. This was the beginning of interdisciplinary research about which we hear so much today in government-sponsored research programs. It is not uncommon today to find in our research that 50 to 100 technically trained research people have had some part in creating a useful therapeutic agent. No other research organization in the United States devoted to health problems, whether it be the university, the institute, or government laboratories, has this capacity. It is through such organization of research that the American pharmaceutical industry has had such a significant effect on the science of therapeutics.

Miracle Drugs and Short Memories

I don't believe that any of the experts would question the superiority of today's therapeutics over those of 1935. Let us remember that the term *miracle drug* was not the invention of the pharmaceutical industry. It was the doctor, the public, and the press who almost simultaneously acclaimed the miracle drugs of modern chemotherapy. The trouble is that our

(*Continued on page 694*)



A QUICK-BREAKING FOAM AEROSOL

The skyrocketing aerosol market whose push-button products range from cologne mists to foamy shave creams is now joined by an entirely new type of aerosol—quick-breaking foam—which promises to bring additional product categories into the realm of pressurized packaging.

The distinguishing characteristic of the new foam is that a small amount can be dispensed in a limited area, yet "goes to work" immediately by breaking into a liquid when disturbed or warmed by body heat. Thus the user is able to dispense a desired amount of product quickly and conveniently in a way impossible with conventional aerosol sprays and foams.

For example, when used in a nail polish remover formulation, a small drop of the new foam can be placed on each fingernail. When the foam is touched with a cleansing tissue it becomes a liquid and can be rubbed to remove the polish.

A host of product applications including after-shave lotion and hair dressing are predicted for fast-breaking aerosol foam by its developers, Allied Chemical's General Chemical Division, producer of Genetron aerosol propellants. Other product applications under test by General Chemical's technicians at its Edgewater, New Jersey, Aerosol Technical Service Laboratory are sun tan lotion, cologne, toilet water, cold wave lotion, and insect repellent.

In the fast-growing field of pharmaceutical aerosols, these formulations provide almost ideal dermatological products. Quick-breaking foam would permit easy and painless application and distribution of antiseptics, analgesics, steroids, antibiotics, and other active ingredients.

Cologne, one of many applications for General Chemical's new aerosol. First applied in the hand, the foam breaks when it is applied to the skin.

The quick-breaking foam aerosol is expected to be useful not only in many cosmetics and toiletries, but also in dermatological applications.

The basic formulation of the new aerosol foam is:

	Percentage
Ethyl alcohol	46.0—66.0
Surfactant	0.5— 5.0
Water	28.0—42.0
Propellant	3.0—15.0

The proportion of surfactant in quick-breaking foam is between one-half and one-twentieth of that employed in formulations for the most popular regular-foam product, aerosol shave cream.

General Chemical's technicians developed the new foam as an outgrowth of their day-to-day work in preparing new aerosol formulations for customers. About two years ago the Aerosol Technical Service Laboratory received a request for a foamy hair tint, and, last year, a customer requested an after-shave foam.

Through this development work and subsequent studies, it was found that the consistency and stability of an aerosol foam could be altered by varying the ratio of the solvents, the percentage or type of surfactant, or the type and pressure of the propellant mix.

Typical formulations are given below. While the surfactant can be nonionic, anionic, or cationic, it should be soluble in one of the miscible solvents (either alcohol or water), but not in both. The particular surfactant (Polawax) used in these test formulations contributes to a colorless concentrate. In all cases, General Chemical's technicians stress that the aerosol should be filled while the concentrate is warm.

AFTER SHAVE LOTION
(Foam Type)

Formulation	Wt. percentage
Part A	
Polawax (Croda)	1.50
SDA No. 40 (anhydrous)	62.10
Part B	
Menthol	0.05
Camphor	0.05
Perfume	0.30
Part C	
Emcol E-607 (Emulsol Prod.)	0.20
Allantoin (Schuylkill Chem. Co.)	0.10
Water, distilled	35.70

Warm part A (110° to 120° F.) to dissolve the Polawax; cool to 100° F. and add part B. Heat part C to 170° to 180° F. to dissolve the ingredients; cool to 100° F. and add to solution of A and B. Fill while still warm (100° F.). Use 92 per cent of the above concentrate with 8 per cent Genetron 12/114a (20:80).

HAIR DRESSING

Formulation	Wt. percentage
Part A	
Polawax (Croda)	1.50
SDA No. 40 (anhydrous)	58.00
Part B	
Ucon 50 HB-5100 (Union Carbide)	3.00
PVP/VA: E-735 (in 50% ethanol)	2.00
Perfume	0.50
Water, distilled	35.00

Heat part A (110 to 120° F.) to dissolve the Polawax; cool to 100° F. and add the perfume; heat part B to 100° F. and add to part A. Fill while still warm (100° F.). Use 92 per cent of the above concentrate with 8 per cent Genetron 12/114a (20:80).

SUN SCREEN LOTION

Formulation	Wt. percentage
Polawax (Croda)	1.50
SDA No. 40 (anhydrous)	60.00
Dipropylene glycol salicylate	3.00
Perfume	0.50
Water, distilled	35.00

Heat Polawax in alcohol to dissolve, maintain temperature at 100° F. and add the rest of the ingredients. Fill while still warm (100° F.). Use 92 per cent of the above concentrate with 8 per cent Genetron 12/114a (20:80).

NAIL POLISH REMOVER

Formulation	Wt. percentage
Polawax	1.50
SDA No. 40 (anhydrous)	23.00

(Continued on page 684)

Formulations can often be made that will produce clear concentrates, for added customer appeal. In some cases, the concentrate is opaque before adding the Genetron propellant. When the container is filled, as below, with Genetron the concentrate becomes a colorless solution.

COURTESY GIVAUDAN-DELAWANNA, INC.

PITFALLS IN PERFUMERY*

BY OLIVER L. MARTON, Ph.D CHIEF PERFUMER, SHULTON, INC.

Those who know perfumery also know that it is one of the most complex fields the human mind is trying to master. A perfumer must have knowledge of the odor type, odor strength, keeping properties, compatibilities, solubility, stability, chemical composition, availability, price range, and the like of each of the many hundreds of raw materials he uses every day in his creative work. Moreover, he must have experience on synergistic and antagonistic odor effects and be able to foresee desirable or undesirable chemical reactions in common mixtures of perfume ingredients. He must be familiar with the build-up of flower odors and know how to duplicate them from basic odorants. Add to all this an iron memory, which he needs to keep all these factors in mind simultaneously while doing the creative work; further, imagination, ingenuity, creative and artistic ability, as well as determination and, last but not least, a trained nose with a capacity to perceive and register odor notes and odor changes, no matter how small they may be, as well as an excellent odor memory plus an infinite amount of patience. Add all these and you have enumerated the most important qualities of a successful creative perfumer, or the prerequisites for any person who aspires to become one.

Perfumery, as everybody knows, deals with a great variety of products, which differ in physical properties, chemical constitution, composition of matter, degree of purity, and so on. Such are the essential oils, aromatic chemicals, isolates from essential oils, gums, resins, balsams, and many other odoriferous natural products. Each of these materials appears to be physically, chemically, and physiologically well-defined by nature in its specific effect on the human nose, the skin, and other parts of the human body, in its effect on the nerves, mood, esthetic concept, or even sexual feel of the human being. Awareness of each of these specific properties determines the creator's selection and use of each substance in his odor composition. On the other hand, knowledge, judgment and taste, likes and dislikes vary greatly among human beings, which evidently makes the perfumer's work more complicated.

Nature has provided the creative perfumer with a great number of tools, an unlimited number of possibilities, of variables, of promises for success. However, a perfumer's sailing is not as smooth as it may appear to the impartial observer. For nature is as tricky as it is helpful. It tends to present pitfalls to anyone at any time, and the perfumer is no exception. Every step of the perfumer's work, in addition to being creative, is governed by attempts, and sometimes futile efforts, to avoid such pitfalls right in the development stage.

Pitfalls in Varying Properties of Raw Materials

Pitfalls threaten from the very first moment a per-

*Presented at the annual symposium of The American Society of Perfumers, Inc., April 1960.

fumer goes to work on a new fragrance composition. One need only look over the list of the most commonly used essential oils and aromatics, from A to Z. There is hardly an essential oil or aromatic chemical that does not have at least one or more shortcomings which will eventually manifest themselves adversely during the active life of the perfume compound. For instance, all the essential oils, with the exception of patchouly, vetivert, and possibly sandalwood, deteriorate within 6 to 12 months; they undergo odor changes even under the best conditions of storage, due to natural internal chemical reactions or other types of deterioration such as polymerization, resinification, terpene formation, oxidation, decomposition by ester splitting, catalytic reactions, and hydrolysis. Add to these natural changes the odor variations from shipment to shipment, due to such factors as origin, method of distillation or extraction, and conditions of storage and shipment, and you will readily understand why perfumers would get grey if the purchase of essential oils were governed solely by the analytical chemist's determination of chemical constitution and chemical purity, and not equally by the odor value, determined by the perfumer's nose. For it is the perfumer who knows what he needs by way of odor for his work.

Pitfalls in the Selection of Raw Materials

Another pitfall is the selection of essential oils by a nonperfumer, for instance, a purchasing agent not familiar with the qualities or grades of perfume raw materials. Compounds frequently contain between ten and 20 or more different essential oils. Add up the necessarily existing quality variations for each of the many natural oils employed in a perfume formula and you will readily see how large a deviation in the final odor of the finished compound the sum of all these individual differences can cause, if the source of supply is changed frequently—so large in fact, that the odor impression perceived when smelling the finished perfume can be different enough from the standard, for this reason alone, to cause considerable trouble for the manufacturer of perfumes or perfumed finished goods. The best way to avoid costly pitfalls of this sort is uncompromisingly rigid odor control of all raw materials, as well as of all finished compounds by the perfumer's standards.

Pitfalls in Wrong Interpretations of the Literature

There are many other traps into which a perfumer, particularly a student perfumer, can easily fall, for instance, in references on essential oils reported to be irritating. Statements like the following occur: "Perfumes, colognes and toilet waters may produce dermatitis in sensitive persons chiefly because of their content of essential and volatile oils."[1]

If perfumers were forced to exclude all the essential oils about which one or more negative reports have been published at one time or another this would bring about the biggest imaginable pitfall in perfumery. For, in this case, the perfumer would not find enough perfume materials of natural origin to work with. Such faulty interpretation would deprive the perfumer of the most important building blocks for his perfume creations, and most essential oil planters, distillers, importers, and dealers would simply have to go out of business. Perfumery has certainly not developed to the high artistic and professional level it now commands by the exclusive use of raw materials which have previously passed the patch test or similar pre-testing procedures for adverse dermatological effects.

(*Continued on page 707*)

COURTESY DODGE & OLCOTT

NARCOTICS MANUFACTURING ACT OF 1960

Simplified controls on a proposed new class of opium compounds that have proved to possess no addiction liability seem possible under provisions of the Narcotics Manufacturing Act of 1960 (the Karsten Act), which will become effective January 1, 1961.

The new act updates the Harrison Act of 1914, which had governed U. S. narcotic controls for nearly 46 years. Shortcomings became increasingly apparent with the introduction of various synthetic narcotics for which no provision had been made, and with evidence that narcotic restrictions could be relaxed for some preparations of certain opium compounds that are not addicting or convertible to addicting substances.

The Karsten Act recognizes past experience with various narcotic preparations as a fundamental factor in establishing the nature and extent of control to be imposed on each one. In each case, the history of abuse or likelihood of illicit use will be a determining factor.

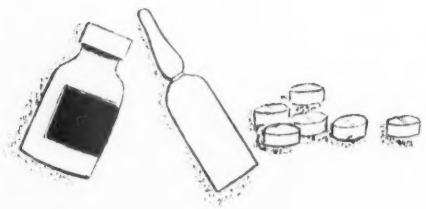
As a result, the Commissioner of the Bureau of Narcotics, Harry J. Anslinger, the only man to hold the position since its establishment in 1930, will for the first time have a procedure whereby exempt allowances for each narcotic preparation may be increased, decreased, added, or deleted.

Mr. Anslinger has announced his intention of recommending new exempt allowances to provide more lenient controls for narcotic preparations of no addiction liability. On the other hand, he plans to recommend revocation, as early as possible, of the exempt status of the dihydrocodeinone cough preparations recently reported to have been misused by groups of teenagers.

The Karsten Act will also put narcotics of both natural and synthetic origin on the same legal basis, for the first time. Both will be subject to the same controls, procedures, and quotas. Preparations of both groups may qualify for exempt status, or freedom from tight control, when the properties of the preparation warrant it.

Nonaddicting drugs like noscapine and papaverine have been under the same full narcotic controls as highly addicting morphine because, as alkaloids of opium, they have been subject to such controls under the Harrison Act.

However, years of experience, and testing at the Lexington, Ky., hospital for treatment of drug addiction, have established that neither noscapine nor papaverine has addiction liability. In addition, there is no known information that either can be converted to an addicting compound.



Under the Karsten Act, narcotic controls on these nonaddicting compounds can be relaxed after they have been formulated into pharmaceutical preparations. As a result, for these compounds it would not be necessary for retailers, hospitals, or practitioners holding narcotic registrations to file reports, keep records, and use narcotic order forms, and the registry of sales to customers now kept by pharmacists would no longer be required. Various forms of promotion, including advertising and sampling, may be permitted on the same basis as that for nonnarcotic preparations under Food and Drug Administration laws and regulations.

Papaverine has been used for years in the treatment of heart ailments. It can be made by synthesis as well as by derivation from opium.

Noscapine was discovered to have a pronounced antitussive effect by Merck & Co., Inc., in 1952. Extensive clinical tests and therapeutic use subsequently demonstrated that noscapine is at least as effective as addicting narcotics in suppressing cough. In addition to safety and efficacy, other advantages have brought it into use in cough preparations that do not require the specific properties of certain addicting substances.

The development of substitutes for addicting compounds has long been a goal of the National Research Council's Committee on Drug Addiction and Narcotics, which cooperated with Merck in the clinical investigation of noscapine.

Commissioner Anslinger indicated that the Bureau of Narcotics expects to utilize the new exempt procedure to reduce the paper work of the trade, the professions, and enforcement groups in connection with narcotics. He estimates that paper work requirements can be considerably reduced.

The Karsten Act lists 27 "basic classes of narcotic

(*Continued on page 711*)

WASHINGTON AND DIABETIC DRUGS

No matter what their intentions are, Senator Kefauver and his cohorts certainly appear to be determined to destroy the pharmaceutical industry in this country if they can possibly do so. And the depths to which they stoop to accomplish this seem to know no bounds. We fail to understand, in the first place, why they undertook to investigate oral diabetic products, other than the fact that someone must have told them that the large number of diabetics in the country represents a large number of votes. There are only three companies with this type of product on the market, and one of them just about completely dominates it.

At the start of the hearings on these products, Senator Kefauver praised The Upjohn Company for a job well done in a costly, three-year program of research with Orinase (tolbutamide) before introducing it to the public. But minutes later, he attacked a business agreement between Upjohn and the German house credited with discovery of the drug, Farbwerke Hoechst, A.G., claiming that it constituted restraint of trade. Both Upjohn president E. Gifford Upjohn, and Upjohn counsel Leslie D. Harrop, denied this, insisting that any American company could manufacture and sell the drug, the patent rights to which are still in dispute. They said that such a company would have to settle financially later with the winner of the patent dispute.

Dr. Upjohn testified that the price of Orinase to the patient was about 12½ cents a dose, or 37½ cents a day, which he figured is about the same as for insulin. Then, the good old committee economist, Dr. Blair, came up with a chart purporting to show a "computed production cost" of $13.11 a thousand tablets, while the druggist in this country pays $4.17 for fifty, making a cost to the patient of close to twice this amount. How the committee determined this cost when Upjohn is the only firm making the drug is not understood, and Dr. Upjohn replied, "That is not the cost of Orinase or anything like the cost of Orinase—that is only a small factor." Also, Dr. Blair claimed that the cost of Orinase in this country was higher than anywhere else in the world. In reply, Dr. Upjohn said he learned from Hoechst that five countries had higher prices than this country.

Dr. Upjohn testified that Orinase is now being used by well over one-half million patients, while Pfizer president John E. McKeen testified that his company's product, Diabinese (chlorpropamide), is used by more than 60,000 patients.

On the second day of the hearings on these drugs, following Mr. McKeen's testimony and that of Dr. George J. Hamwi (physician in charge of the Division of Endocrinology and Metabolism in the Ohio State University Health Center, which has in its clinics about 1,000 diabetic patients), who described his experience with Diabinese, the committee presented as a witness Dr. George Dolger, chief diabetes specialist at Mount Sinai Hospital in New York.

Dr. Dolger's testimony was a challenge to the Food and Drug Administration for releasing Diabinese for sale in 1958 after "some 2,000 case reports were submitted (by Pfizer) and despite the inclusion of 43 deaths and a number of instances of jaundice" in the case histories of clinical tests. Immediately Dr. Dolger was challenged by Dr. Hamwi, as well as by two Pfizer physicians—Drs. Robert M. Rees and Robert C. Warner. Dr. Alexander Marble, a specialist at the Joslin Diabetic Clinic in Boston, told the subcommittee that there is urgent need for unbiased information from some neutral agency concerning the drug.

Dr. Hamwi disputed Dr. Dolger's report of 43 deaths, saying: "I know of only four deaths that could be related to the taking of chlorpropamide prior to the release of the drug, and after very careful study of these cases it was concluded that all might have been avoided." Drs. Rees and Warner, associate medical directors of Pfizer, also contended they knew no basis for the statement about 43 deaths. They took

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ITCHING

Part Two. TYPES AND TREATMENT

BY BERNARD IDSON, Ph.D. TECHNICAL DIRECTOR, DOME CHEMICALS, INC.

In spite of advances in understanding, the treatment of persistent itching is still more art than science. Pruritus is defined as the symptom, itching, and the reaction, scratching.

Itching is a frequent symptom in all types of dermatitis. It may be noticed only in certain phases of a disease such as seborrheic dermatitis. However, in other types of dermatoses such as atopic dermatitis and lichen simplex chronicus, itching is a predominant feature and the beginning of almost all that follows.

Itching suggests different things to different specialists. To the internist it suggests internal diseases such as diabetes. The endocrinologist looks to menstrual disorders or menopause. The psychiatrist considers tension, insecurity, frustration, or other emotional factors. The allergist is likely to think first in terms of susceptibility to foods, drugs, or environmental factors. The geriatric specialist looks to nutritional disorders. The proctologist, in noting anal or vulval involvement, often remembers that removing the itch may remove one of life's minor pleasures, and the itch may be replaced by an even more dour patient. The dermatologist regards itching as a symptom of many diseases. He also is only too well aware that, while discovering the cause may be a long and tedious process, elimination of the cause is often infinitely more difficult. "The skin is slow to forget and slow to forgive," and may itch long after the somatic cause has been eradicated. However, it cannot be overemphasized that itching may precede and aid in the early discovery of diabetes, blood dyscracia, tuberculosis, Hodgkin's disease, leukemia, and other carcinomas.

Pruritus can be clinically divided into those cases in which there is no ascertainable cause, or primary pruritus, and those in which causes can be discovered. The itching may be general or local. In either form it begins usually by a tickling, pricking, crawling, or itching sensation in the skin which causes the sufferer to rub, press, scratch, or otherwise seek relief through pain.

Treatment involves investigation of cause. The causes of generalized pruritus may be parasitic (scabies, pediculosis, insects), senile, systemic (nephritic, hepatic, endocrine), psycho-neurogenic, atmospheric, lymphoblastic (Hodgkin's disease), toxic-allergic

(drugs, foods, infections), or cutaneous (eczema, lichen planus).

For itching due to scabies or other parasites, there are specific remedies such as benzyl benzoate or benzene hexachloride, all of which are superior to the old-fashioned sulfur treatments. For practically all the other types of generalized pruritus, the treatment depends not only upon the cause but quite as often upon the severity of discomfort, the nature and degree of secondary changes in the skin, such as infection and eczematization, and upon the emotional stability of the patient.

The most common generalized variety of itching is that which occurs in older persons, called senile pruritus. The disease is due to atrophic and degenerative changes in the skin, with associated dryness. Another important variety of generalized pruritus is a seasonal neurosis commonly known as "winter itch." This disorder occurs in the autumn and winter, and becomes milder and clears up with the approach of warm weather. A similar variety of pruritus occurs in patients immediately following a bath, lasts from a few moments to an hour or so, and gradually subsides. It attacks adults more frequently, especially those with dry skin. Soaps, especially medicated ones, may be contributory. Allergy in any of its forms may provoke generalized itching. Gases or dusts may act by absorption via the respiratory system, or they may act by direct contact. Antibiotic therapy often produces itching; it is linked to the changes in the intestinal and mucocutaneous flora, with accom-

panied unrestrained growth of fungi.

Psoriasis may cause severe pruritus, but itching is usually not a characteristic feature. Itching is usually a function of a secondary dermatosis, as in the scalp or anogenital region.

Local pruritus affects chiefly the anal and genital regions, and occasionally the palms, face, and scalp. Pruritus ani, the most common of localized pruritus, occurs predominantly in males—70 per cent as compared to 30 per cent among females. The great majority of patients are over 30 years of age. Neurogenic pruritus ani, or that traced to emotional stress, constitutes about half the cases. About one-quarter are secondary to surgical conditions of the ano-rectal area, such as fissures or fistulas. Any ano-rectal lesion which tends to increase local moisture and promote maceration is apt to cause itching. Roughly 20 per cent of pruritus ani is secondary to dermatological lesions such as psoriasis, syphilis, lichen sclerosis, or bacterial and fungal dermatoses. General conditions account for roughly 10 per cent of anal itching such as diabetes, liver diseases, or parasitic infestations of the intestinal tract.

The itching may be limited to the anogenital region, but frequently it extends over the scrotum, buttocks, and parts of the thighs. In women it is frequently associated with pruritus vulvae which, curiously, is relatively mild when the pruritus ani is severe and, conversely, when the pruritus vulvae is severe there may be little or no anal itching. Because of the abundant nerve supply and delicacy of the skin, itching in the ano-genital areas is much more severe than it is in dermatitis elsewhere. Consequently, mechanical irritation from scratching, secondary infections, and systemic effects are more common.

Many pruritus ani patients are psychoneurotic individuals who have an unconscious need of itching. Some clinicians hesitate even to attempt an abrupt cure, since the patient may acquire some other condition, considerably more difficult to handle. In general, the psychiatric factors of pruritus are still poorly understood. It is seldom clear what is cause and what is effect. Probably the most important job the physician faces is the reestablishment of the patient's emotional balance. The chief predisposing factor, at least in the United States, appears to be nervous exhaustion. Fatigue, insomnia, anxiety, and nervous tension exacerbate the problem.

Treatment of pruritus ani is naturally dependent on the causative factors, if they can be pinpointed. Intestinal parasites are treated with suitable preparations such as arsenicals (acetarsone or neoarsphenamine). Fungi and yeasts can be overcome with fungicides, or with antibiotics such as Nystatin. Sedatives and tranquilizers are widely used where nervous tension is involved. Local measures are characterized by their mildness. The chronic aspects of the disease often make the patient, and the physician, willing to try any offered medication. Unfortunately, many of these materials are sensitizers, such as the common 'caine' type local anesthetics. They tend to overtax the resistance of an already delicate skin, with approximately a 10 per cent incidence of contact dermatitis.

Many of the preparations listed by manufacturers for treatment of pruritus ani were primarily designed for action against hemorrhoids. The logic is that regression of hemorrhoids will relieve associated pruritus ani.

Varied specialized treatments have been advocated for pruritus ani, all having their degree of success. An antipruritic wet dressing is the soft, cotton flannel pad, saturated with witch hazel and glycerine (Tucks, Fuller). These convenient pads find use in intractable cases of pruritus ani as an adjunct to specific therapy. However, the main local daytime application is still calamine lotion containing phenol. Many dermatologists use tar extract (liquor carbonis detergens) as the main local antipruritic, especially where there are thickened patches. Use of methylrosaniline dyes such as gentian violet has been largely dispensed with. Topically applied amino acids derived from lactalbumin (Hydrolamins, Lewal) have been claimed to be effective. The amino acids are supposed to neutralize protein-precipitating irritants responsible for pruritus.

Tablets of mixed cultures of *Lactobacillus acidophilus* and *bulgaricus* (Lactinex, H. W. & D.), as well as *L. acidophilus* alone (Bacid Culture and Neo-Cultol, Arlington-Funk), are claimed to restore and stabilize the intestinal flora and relieve pruritus ani. An older oral treatment for pruritus ani involves promotion of aciduric intestinal flora by use of a Malt Soup Extract (Borcherdt). The rationale is that in pruritus ani the stools are usually strongly alkaline. Malt Soup Extract encourages the growth of aciduric bacteria in the intestines. The feces acquire an acid reaction and anogenital itching is said to be relieved. The Malt Soup Extract contains specially pressed nondiastatic barley malt extract.

Vulvar pruritus is an exceedingly common gynecologic problem. It is most common at or shortly after the menopause. The predominant cause of vulvar itching is infection by the protozoa, *Trichomonas vaginalis*. Studies have shown that over 95 per cent of pruritus vulvae is due to trichomoniasis, and in lesser measure to the yeast, *Candida albicans*. Minor causes are menopause and deficiency diseases, especially that of vitamins A and B complex, as well as anemia. Use of vitamin B complex and vitamin A have been recommended and are beneficial in vulval itching associated with kraurosis or leukoplakia. There is definitely an endocrine factor in many women, because menopausal patients are frequently benefited by use of estrogens. The psychosomatic factor is again of utmost importance.

Though the cause may be found and the infection

(*Continued on page 684*)

WHAT PRICE BEAUTY?*

BY L. STAMBOVSKY, Ph.G

*This is the second of two articles by Mr. Stambovsky on the subject of vitamins. Part one appeared in the April issue.

The Vitamins

The vitamins have been divided into two broad groups, fat-soluble and water-soluble. In the first classification, vitamins A, D, E, and K have been shown to be indispensable. A number of fatty unsaturates, formerly collectively termed vitamin F, while not strictly a vitamin as the word is interpreted, seem to be essential in the preservation of normal skin integrity, and, in a still unknown manner, govern quantitatively the cholesterol synthesis: the water-soluble division is composed of thiamine, riboflavin, niacin, folic acid, pantothenic acid, biotin, pyridoxine, essential methyl transfer group (choline, betaine and methionine), inositol, para-amino-benzoic-acid, vitamin B_{12}, and ascorbic acid. The absolute need for these biochemicals has been firmly established.

Minerals constitute but 5 per cent of human and animal nutrition, yet they occupy a critical position in metabolism and hard tissue structure. Any form of interference with mineral chemistry will quickly provoke serious physiological disorder by virtue of participation in three major physiological functions which are structural (bones), catalytic, and enzymatic. The skin eventually will react unfavorably to mineral deficiencies or to excesses indirectly through the intermediary of systemic deterioration. Those minerals proved vital are calcium, phosphorus, magnesium, sodium, potassium, manganese, iron, copper, cobalt, iodine, sulfur, zinc, fluorine, and molybdenum.

Dermatological Signs and Symptoms of Malnutrition

We shall enlarge upon only those dietary accessories which, when deficient, produce known, demonstrable, and curable dermatological disorders, and which are directly relevant to the cosmetic industry. Vilter[4] summarizes the common alterations in skin engendered by deficiencies of essential nutrients: erythema or reddening due to dilatation of surface and sub-surface blood vessels; melanin pigmentation following such erythema; hyperkeratosis due to deviations in the formation of new epithelial cells; denudation of surface epithelium manifest as scaling; thickening around hair follicles; quantitative and/or qualitative changes in sebum production. Hypo-vitaminosis symptomology cannot sharply differentiate or identify each individual vitamin. The basis for this limitation may be found in Vilter's[4] axiom to the effect that the skin can respond to nutritional adversity in but few forms, as already stated. Therefore, there is some overlapping in deprivation reactions among nearly all the vitamins, and even among certain vitamins and basic foodstuffs not classified as accessory or catalytic. For example, niacin, riboflavin, and pyridoxine deficiencies all frequently induce a seborrhea type of dermatitis about the face; deficiencies of vitamins A and C will evoke hyperkeratotic symptoms that are more or less indistinguishable; cheilosis or inflammation of the lips and

transverse fissuring characterize niacin, riboflavin, pyridoxine, protein, and iron deficiencies. Irrespective of which nutrient seems predominantly implicated, successful therapy is dependent upon recognition of the fact that clinical or spontaneous deficiency of one vitamin does not exist. The food source of all vitamins is more or less identical. The poorest ration generally cannot be said to be adequate in all vital nutrients with the exception of one only; foodstuffs are almost invariably highly varied in their contents. Even the multiple, destructive manipulations to which many foods are subjected could not bring about the complete inactivation of but one element with full preservation of the balance. It becomes abundantly clear that any diagnostic sign indicating malnutrition is evidence that all nutritional factors are simultaneously in short supply. Consequently, the effective management of nutritional deficiencies demands the administration of all vital factors, and although the word "shotgun" is forbidden in best therapeutic circles, such procedure is a must in the treatment of nutritional disease.

Vitamin A

Vitamin A is reputed to be one of the most important of all catalytic biochemicals, with far reaching and profound negative and positive effects, depending upon its absence or presence. Vitamin A deficiency is etiological in several skin defects of financial relevance to the cosmetic business; early signs and symptoms are that the skin becomes dry, rough, and inelastic—the sweat glands atrophy and cease functioning. Hyperkeratosis of the hair follicles is characteristic, appearing as an elevation and enlargement of the hair follicle, with spine-like sebaceous material occupying the opening. The physiology represented by this latter change consists of several reactions: the sebaceous glands are small, sacular glands surrounding or in intimate proximity with the hair follicle, which normally secrete a liquid lipid or fatty material called sebum, which is discharged through the sebaceous duct into the hair follicle. When there is an insufficiency of vitamin A for a considerable time, the hair follicle or depression in the skin whence the hair grows becomes partially or even completely occluded through excessive keratinization or thickening of the wall of this depression or follicle. Since the hair follicle serves as the final portion of the passageway in the flow of sebum to the surface of the skin, any reduction in its diameter will impede or terminate the movement of sebum from the sebaceous gland to the exterior. At the same time, subnormal levels of vitamin A have instigated keratinizing metaplasia or atrophy of the sebaceous gland itself, resulting in a diminished production of sebum. Due to these simultaneous processes, the quantity of sebum is reduced and delivery is restricted or stopped. These two alterations in the lubricating mechanism of the skin, concertedly or individually, are soon translated into visible dermatological disturbances. First, sebum in the follicle and in the sebaceous ducts, unable to issue from these passageways, becomes inspissated and hard, and forms protruding, cornified plugs which when expressed leave ugly, gaping holes; this syndrome is more or less confined to the lateral aspects of the thighs, forearms, extensor surfaces of the legs, abdomen, buttocks and neck. The second phase initiated by vitamin A deficiency stems from the lack of skin lubrication—when the flow of sebum is retarded or ceases, by means of either follicular hyperkeratosis or atrophy of the sebaceous glands or both, the integument no longer receives essential lubrication and becomes dry, inelastic, wrinkled, inanimate, and aged. These processes, when fully operative, generate the most common of all skin complaints, namely, dryness of the skin and hair—two maladies which rank near the top in incidence and expenditures for topical relief. About 90 million dollars worth of creams are purchased annually by the women of America for the sole purpose of skin lubrication. The hair will also suffer from this same lack of lubrication, and will become dry, brittle, unmanageable, and lustreless. The prevalence of this condition may be partly gauged from the sale of men's and women's hair dressings, which amounted to 87.58 million dollars. Neither do the nails escape from the influence of vitamin A inadequacy. They become dry, brittle, and ridged. Lehman and Rappaport[5] conclude that sub-optimum levels of vitamin A are much more common than is generally estimated, and that various skin lesions classified under hyperkeratosis are repercussions of such deficiency. Tables 1 and 2 (See previous issue, pp. 473 and 565.) seem to confirm their claim.

Thiamine

Thiamine insufficiency does not directly precipitate dermatological disorders excepting possibly vasomotor-induced reactions such as cold, moist hands and feet. Systemically, thiamine deficiency will eventuate in cardio-vascular, neurological, and gastro-intestinal pathology. Obviously any reduction in general health will sooner or later be manifested in a loss of skin appeal.

Riboflavin

Ariboflavinosis is incriminated, although not exclusively, in lesions of the lips, mouth, and and skin. Corneal vascularization is a common sign, as are damaging effects in the neurological system, hemopoiesis, and probably in other physiological functions. The mechanism accountable for such symptoms is the excessive stimulation of the sebaceous glands. As we have previously stated, the sebaceous glands lubricate the skin and hair by the synthesis and excretion of the lubricant, sebum. When excessively stimulated, as by riboflavin deficiency, a condition arises known as oily skin, especially about the nasolabial folds, the nose, and cheeks. Further extension of this

abnormality results in the superabundant deposition of a more viscous type of sebum. The continued excessive discharge of sebum engorges and soon distends the sebaceous duct and hair follicle far beyond normal size. If the abnormal production is impeded in its journey to the surface of the skin by a lessening of the diameter of the hair follicle as in follicular hyperkeratosis (vitamin A deficiency), then the sebum restrained in the sebaceous ducts and hair follicles soon becomes inspissated, with total loss of mobility. The unceasing elaboration of sebum under the described conditions can now escape only with great difficulty, if at all, and continues to expand the sebaceous ducts and hair follicles; soon this entire process is evidenced as a white-head or sebaceous plug; in time, atmospheric dust and dirt collect on the surface of this plug and, along with further drying and oxidation of the sebaceous material, create the abhorred blackead. These formations can be forcibly removed, leaving a repulsive, gaping hole, an enlarged pore, which requires many years, if ever, to return to normal size. The areas most affected by the appearance of blackheads are the nasolabial folds, the nose, cheeks, and forehead. In the train of events just outlined, riboflavin is not the only factor involved. As mentioned earlier, vitamin deficiencies are never singular. Where riboflavin deficiency exists, vitamin inadequacy is also a certainty, and this, it will be recalled, produces follicular hyperkeratosis with subsequent reduction in the cross-section of the hair follicle. Under such circumstances, the retardation in the flow of sebum through the hair follicle compounds the effect of hyper-secretion by the sebaceous glands. These two sequelae, excessive sebum production (riboflavin), and inhibition of sebum flow (vitamin A), together constitute the blueprint for the fabrication of that adolescent nemesis, blackheads. The ultimate in this chain reaction has not yet been reached: abnormal quantities of sebum remaining static in clogged sebaceous ducts and hair follicles provide an ideal pabulum and environment for invading bacteria or micro-organisms; if such invasion is successful, the infected process is now a single acne lesion. Thus we have traced the conception and birth of the most dreaded of youthful hazards, acne.

Of the total American outlay for cosmetics, 85.32 million dollars was for makeup bases and various types of face powder used to conceal or mitigate the presence of enlarged pores, excessive oiliness, blackheads, and related blemishes—all past or present signs of sebaceous dysfunction, primarily attributable to riboflavin deficiency. Gauging from the seeming incidence of these conditions, at least half of all adult females are starved of riboflavin. Liquid facial cleansers are specifically enlisted to remove excessive sebum or oil from the skin, which may also be credited to vitamin B_2 deficiency. The deficiency of riboflavin and several other members of the water-soluble group are responsible for the creation of still another class of cosmetic products—lip balms and protectants. The symptoms which motivate the purchase of these preparations are transverse fissuring, chapping, and dryness of the lips, particularly during the winter months. There can be no denial that a great segment of the cosmetic dollar volume has been created by an insufficiency of riboflavin in the American diet.

Nicotinic Acid—Nicotinamide

Inadequate intake of this catalyst will evoke the classic picture of pellagra. The acute form is rare in America, but mild, chronic, low-grade undiagnosed cases are common. The symptomology encompasses three major facades—dementia, diarrhea, and dermatitis. In the latter we note signs of deficiency mutual with other members of the water-soluble group of vitamins: the lips become dry, fissured, and cracked and erosions appear at the angles of the mouth; a seborrhea type of dermatitis displays a predilection for the nasolabial folds; the backs of the hands, forearms, elbows, knees, or other areas subject to various forms of irritation or trauma including sunlight, sooner or later exhibt a dermatitis—the skin is rough, cracked, scaly, and erythematous. Sebaceous glands may atrophy, resulting in improper skin lubrication; other cutaneous manifestations may eventuate, such as hyper-pigmentation in the affected areas, scarring, and peeling. Where sub-clinical or full-blown pellagra has been ascertained, complete and rapid recovery will be contingent upon the supplementation of all water-soluble vitamins.

Pyridoxine—Vitamin B_6

Fifteen years have elapsed since this member of the B complex group was discovered. A massive bibliography has been assembled cataloging the effects of pyridoxine deficiency. According to Krehl,[6] these include increased brain excitability and seizures, disorders of the skin, alterations in fatty acid metabolism, improper amino acid metabolism, anemias, imparied antibody development, atherosclerosis, and dental caries. Vilter[7] and his associates immensely advanced our knowledge of this vitamin by artificially producing deficiency states through the administration of desoxypyridoxine, a pyridoxine antagonist. The *Merck Service Bulletin*,[8] declares that the skin lesions resulting from pyridoxine inadequacy are similar to those associated with riboflavin or niacin deficiencies. These lesions are seborrheic in nature and commence as an area of reddening in the nasolabial folds or around the eyebrows and at the corners of the mouth, sometimes accompanied by intense itching or burning. These symptoms may extend to the face, scalp, neck, shoulders, perineal region, and the buttocks.

Jolliffe et al.[9] suggest that vitamin B_6 may have a direct functional influence on the sebaceous glands of the skin and may also enter into the cause or cor-

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Packaging and Selling

Applique Sachet by Bourjois, Inc.,
a single-unit fragrance dispenser. Removal of the rigid plastic cap, a tilt of the bottle, and pressure against the spots to be perfumed releases the contents through a plastic-rimmed covering of nylon satin dyed to match the established shade of each fragrance. A matching foil label surrounds each bottle.

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METAL CONTAINERS FOR DRUGS AND TOILETRIES

BY THEODORE W. SCHMITT EXECUTIVE VICE-PRESIDENT, PEERLESS TUBE COMPANY

Collapsible metal tubes have constantly changed with the times, to open up many new product developments, and, in the last decade, the new aerosols have made possible a host of new product applications for drugs, cosmetics, and toiletries. Consumer acceptance of tubes is well known; over a billion are being produced annually. Although this began only a few years ago, already the metal variety has an annual volume of over 330,000,000 units, a ten-fold increase since 1951. The "baby" metal aerosol, with a content of six ounces or less, has had an even more startling rise; present volume, in excess of 160,000,000, is a 2,000 per cent increase over 1951.

To go back to the beginning, the first collapsible tube was patented for paints in 1841 by a New Hampshire artist named John Goffe Rand, far better known for his invention than his art. The first major use came in 1892, when a New London, Connecticut dentist named Dr. Washington Wentworth Sheffield hit upon the idea of packaging toothpaste in tubes, for convenience, protection, and sanitation. It was an instant success, prices dropped, and the U. S. dentifrice industry was spawned.

There were many industry advancements between this first widespread use of the collapsible tube and World War II. Among the highlights: five-color printing, including base coat, as early as 1912; reproduction shortly thereafter of a halftone photograph on a tube, by our company; a tube within a tube to contain separately toothpaste and a coloring agent; development of a thermoplastic adhesive for cementing cap liners, in the Nineteen Thirties, and an improved version of the syrette, a self-contained, single-dose hypodermic unit, originally supplied during World War I. A shipment of the improved version for strychnine and for morphine to combat shock arrived in Honolulu during the Pearl Harbor attack; 75 million syrettes followed our troops during World War II. Among the unusual wartime uses of collapsible tubes were the packaging of camouflage paste, of chemicals to detect poisons, of pyrotechnic pastes that were ignited as directional signals, of ointments for treatment of flash burns, and of dental impression materials. For several years, for instance, considerably more than half our company's production was devoted to ointment tubes for prevention of poison gas burns.

This wartime effort was handicapped by the fact that tin and aluminum were in extremely short supply after the outbreak. Tin, for instance, was only accessible for tubes containing opthalmic ointments and blood plasma; even the early sulfa ointment had to be packed in lead tubes.

Fortunately, Peerless had been able to design and build a vastly improved internal waxing machine in 1940, an absolute necessity if lead tubes were to be filled with sensitive products, especially any products reaching orifices of the body. Frederic Reming-

Count On Newman-Green Valves For Finer, More Uniform, Mistier Spray Patterns

Newman-Green's exclusive spray head design produces a uniform spray pattern that is finely atomized and evenly dispersed. The unique two-tone spray head assures quick, positive identification of the orifice opening. Direction of the spray pattern is always immediately apparent.

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The built-in quality of Newman-Green valves attest to the thorough inspections and control methods, necessary to providing the pressurized packaging industry with the best valve obtainable. Its dependable operation sparks consumer acceptance and that's what counts! Call your nearest Newman-Green representative today for pertinent help in solving any of your aerosol packaging problems.

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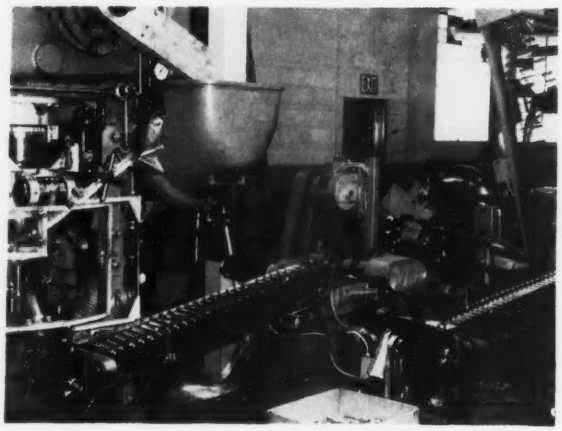
FIVE-YEAR SURVEY OF COLLAPSIBLE METAL TUBE PRODUCTION IN U. S. BY PRODUCT
Statistics Compiled by Collapsible Tube Manufacturers Council

Year	Total Tubes	Dentifrices	Drug & Pharmaceutical	Cosmetics	Household & Industrial	Shaving Cream	Foods
1959	1,150,013,808	581,168,592	248,695,344	104,187,024	176,197,968	39,146,544	618,336
1958	1,004,947,488	512,863,632	203,665,248	78,069,024	166,299,840	43,406,352	643,392
1957	1,089,838,656	581,391,792	205,100,784	95,568,192	161,817,696	45,219,744	740,448
1956	1,035,863,280	523,189,008	213,575,328	81,914,400	163,490,256	52,832,304	861,984
1955	1,046,152,368	556,142,976	193,991,616	83,711,088	156,218,256	55,365,120	384,480



The first section of Peerless Tube Company's automatic production line for extruded, one-piece aluminum aerosols. Aluminum slugs are impact extruded by the 75-ton Clearing press at left, fed by a "bubble" conveyor to trimming machine. Then later, a patented process curls the lip of the neck inward for maximum protection against leakage problems.

ton, president of Peerless, released design of the machine to all tube manufacturers, stipulating only that they should not build machines for sale.

In 1944, we again improved and automated the internal waxer, so it could line about 130 gross per eight-hour shift. Today, there are about 50 of these machines in operation throughout the world.

World War II also saw the parade of "wonder drugs," which started with development of the sulfas in 1936 in Germany, and which were particularly suited to tubes and later to aerosols. Sulfathiazole ointment in tubes appeared in 1942, sulfadiazine a year later. Too late for the war, a penicillin ointment became available in 1947 for opthalmic and dermatologic use. These were followed by the first truly broad-spectrum antibiotic, Aureomycin, discovered by Dr. Benjamin Duggar of American Cyanamid Company's Lederle Laboratories in 1948. Both Aureomycin and Terramycin ointments were packaged in tubes in 1952, hydrocortisone acetate and cortisone acetate in 1954. Other wonder drugs have followed, and today they are increasingly being packaged in tubes, for utmost product protection. When spray action is desired for eye, ear, nose, and throat application, or when evenness and smoothness of coverage is an essential, aerosols are a perfect answer.

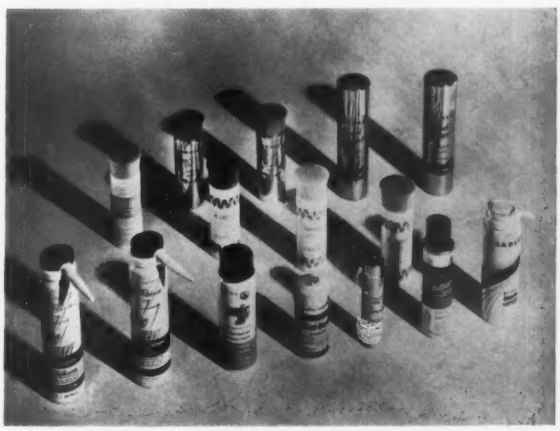
To return to Aureomycin, the tube industry was faced with the problem of designing a metal neck that could be inserted into the teat of a milch cow having mastitis, a disease which was costing the dairy industry almost a quarter billion dollars a year. Peerless eventually came up with the best answer in 1949, a 5/8 inch-long neck with an orifice of 30 to 35/1000 of an inch, an outside diameter of approximately 93/1000 of an inch, and an extremely smooth tip. When you consider that these had to be made in one extrusion, on a production basis, the problems involved can be imagined.

Another advance in medical packaging was made in 1953 with the introduction by A. H. Wirz of strippable lithography, in which the coating can remain as a permanent label or be stripped off by the pharmacist. This development achieved immediate popularity, and most large pharmaceutical producers used this method for labeling all tubes containing prescription drugs.

The pharmaceutical industry also stimulated tube manufacturers to devise new internal linings. It was discovered that aqueous-base ointments are more effective than the standard petrolatum-base types. However, these aqueous bases attack the tubes, even when the best waxes are applied to chemically inert, pure tin tubes. This problem was finally solved by applying vinyl and phenolic base lacquer linings. Recently the epoxy resins have become commonplace.

Besides the mastitis tip, there is a wide variety of tips for special purposes. These include the eye or opthalmic tip, usually made of tin; the nasal tip in tin or lead; the screw-eye tip, familiarly seen on tubes of cements or adhesives; the break-off tips and other single-dose containers for measured applications or product samples; the screw-on cap for tubes with aluminum diaphragms, for added product pro-

(Continued on pages 702—703)



Wherever She Goes...

she will treasure

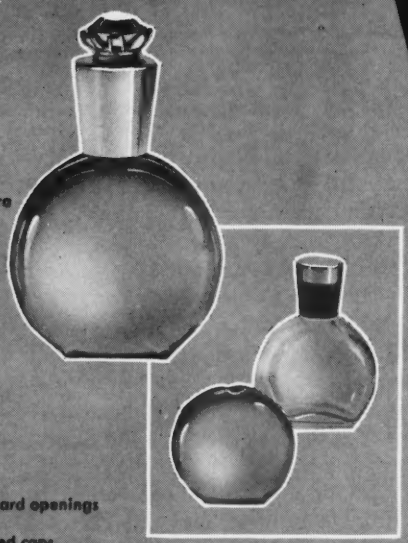
these handy, refillable containers

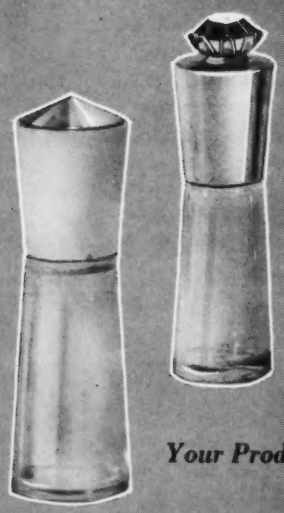
RICHFORD'S OUTSTANDING PURSE-SIZE FLACONS

Available in an unlimited selection of bottle and cap combinations, Richford has designed these beautiful flacons to meet "her" needs.

Princess

Featuring the new snap-off gold metal case, for easy bottle replacement. Available with futura or assorted caps in exceptional finishes.





1 and 2 dram sizes
spillproof or standard openings
with futura or assorted caps
in a variety of finishes.

Your Product Deserves

RICHFORD
CORPORATION

Write now for samples and prices.

Executive Offices and Plant
3618 Oceanside Rd., Oceanside, N. Y.
Showrooms
Empire State Bldg., 350 5th Ave., N. Y., N. Y.

Sales offices in all major cities throughout the world

News in Packaging . . .

Plastic Aerosol Overcaps

Sunbeam Plastics Corporation, P.O. Box 4038, Station A, Evansville, Indiana, has announced that they are now producing plastic aerosol overcaps in several styles. Some of the features of their caps are Tripl-Lok, flat stacking tops with three gripper lugs reaching over crimped can neck, three tapered flats for snug fit, and three areas between flats providing friction grip for additional smooth holding power; external gating for smooth inner surface, safe clearance between nozzle and cap top, no inside tit to actuate valve accidentally, and greater strength through uniform wall thickness.

Sunbeam operates its own airplane for swift service, and is now represented in the east, north of the Ohio River, by the McKernan Company in Elgin, Illinois, and in New York City, with Roy Hemmingstad in charge of sales in the latter office.

Brillantina Linetti by Linetti Perfumes, Venice, Italy, which uses Risdon's Micro-Mist mechanical break-up actuator, and metered valve. Both valve and actuator manufactured by Solfrene, S.p.A., Milan, a licensee of Risdon.

Brilliantine in Flint Jar

Shulton, Inc., is now packaging its Old Spice Brilliantine in a two-ounce flint jar, for product visibility, which the company feels is a major factor in marketing the product. The package shows off the sea-green color of the brilliantine. The cap, in off-white with the brand name in bright red and the ship trade mark and product name in blue, is simple and neat.

The glass jar is manufactured by the Hazel-Atlas Glass Division of Continental Can Company, the metal cap by Crown Cork and Seal.

Revolving Plastic Cap

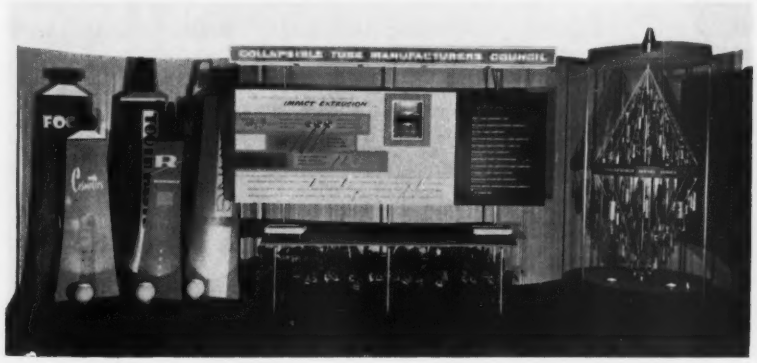
A revolving plastic cap for talcum powder and similar products is now being manufactured by the J. L. Clark Manufacturing Company. It is snug-fitting, turns easily, has stops for open and closed positions, and sift-proof protection.

Made of polyethylene, the cap is available in a wide selection of colors.

Two-in-One Case

Coty, Inc., has introduced its Riviera twin lipstick case, which holds two lipsticks in a tortise shell plastic case with an oval mirror on top. Lipsticks are coordinated in color, but the customer can choose her own colors. Designer of the package is Eric deKolb, and the case is manufactured by Pyro Plastics, Inc.

Collapsible Tube Manufacturers Council's booth at the American Management Association National Packaging Exposition which was held in April in Convention Hall, Atlantic City. Giant mock-up of tubes at left show their major uses; seven-foot high merry-go-round at right holds scores of tubes; center panel is animated demonstration of impact extrusion process. Council includes Art Tube, Atlantic Mfg., Michigan Collapsible Tube, National Collapsible Tube, Peerless Tube, Sheffield Tube, Standard Collapsible Tube, Turner Tube, Wheeling, White Metal, Wirz.



Proof-of-purchase disks in plastic closure being used by Mennen on 4 items. Easily removed, varnish is odorless, tasteless; disks resist water well, also weak acids, alkalies. Supplied by Owens-Illinois Glass Company.

New item in Tussy's line, "Learn the art of making eyes with Eye Cue Shado-Rama," a six-inch wand that supplies six shades in six sections, each in a color corresponding to the color of the eyeshadow, and easily removable.

New Stick Deodorant for Men

Kings Men has introduced a new stick deodorant and anti-perspirant. A white, fluted plastic column is capped by a bright red top. For use, the bottom of the container is pressed gently, the stick extends.

(*Continued on page 635*)

Plastic, nonbreakable version of the classic finger-grip jug, blow-molded of W. R. Grace's high-density polyethylene, by Vantines, Inc. Half-gallon size weighs 3½ ounces empty. They reduce freight costs and packaging costs by eliminating much breakage protection.

NOW! . . . *out of* **genetron®** *aerosol research*

A new concept in aerosols . . .

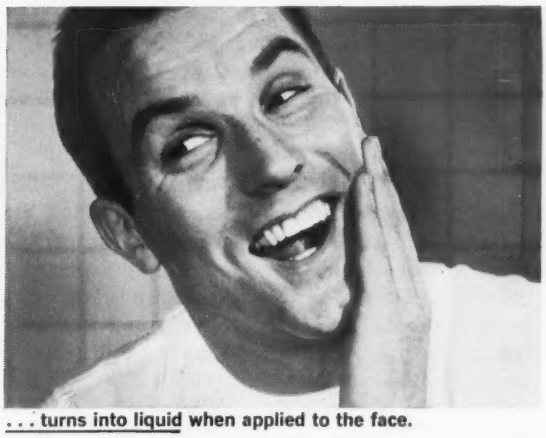
QUICK-BREAKING FOAMS

Unique quick-breaking aerosol foams are dispensed on a limited area . . . break into liquid when disturbed! Promise important advantages for many products, including:

- **After-Shave Lotions**
- **Nail Polish Removers**
- **Hair Dressings**
- **Sun Screen Lotions**
- **Cold Wave Lotions**

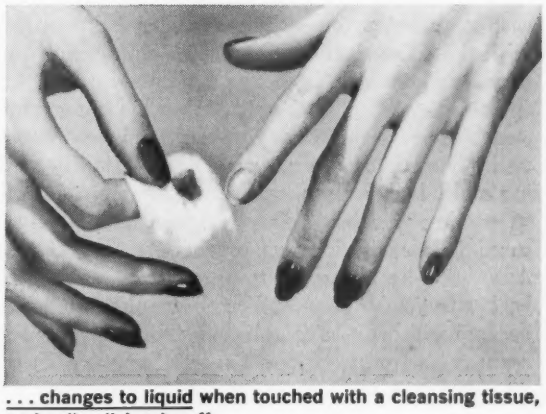
In after-shave lotions and nail polish removers, for example, see how new Quick-Breaking Foams can be used to make application easier and more convenient . . .

Quick-breaking foam in the palm of the hand



. . . turns into liquid when applied to the face.

A dab of quick-breaking foam on the fingernail



. . . changes to liquid when touched with a cleansing tissue, and nail polish rubs off.

Out of intensive, continuing aerosol research in General Chemical's Technical Service Laboratories comes an important new development with dramatic potential for product improvement . . . *Quick-Breaking Aerosol Foams!*

These unique quick-breaking foams add new advantages, new product appeal that pays off in greater consumer acceptance. With this new principle you may overcome application deficiencies of many spray or stream-type aerosols; give them the extra touch of "magic" that bolsters sagging sales and builds repeat business.

Investigate this new research development *now.* As a first step, mail coupon for free information bulletin.

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N.Y.

genetron®
aerosol propellants

Putting the "push" in America's finest aerosols

DC-50

"Genetron" Department
GENERAL CHEMICAL DIVISION
Allied Chemical Corporation
40 Rector Street, New York 6, N.Y.

Please send free "Genetron" Product Information Bulletin, "Quick-Breaking Aerosol Foam Products."

Name_____

Title_____

Company_____

Address_____

City_____ Zone____ State_____

Packaging and Selling

Esme of Paris, or more properly, Esmeralda Consuela Maria, one of the most colorful personalities ever to enter this highly colorful perfume industry, died alone in a small penthouse apartment last month.

When we first met Esme, at the time she introduced her perfume Green Eyes, she had a two-room penthouse apartment filled with odd furniture, endless magazines and newspapers, and a rather strange collection of books, on the roof of a minor midtown hotel. Just outside the tiny apartment, occupying the rest of the roof, was a full-size professional circus trapeze.

Esme was born of a Spanish mother, the daughter of a Spanish gypsy known as Lolita Bazil, who had a circus act "A Night in India," with a supporting cast composed entirely of snakes. Her father was an Irish-Canadian businessman, and she herself was born in Wheeling, W. Va.

According to a fictionalized but highly exciting story of her life published in 1947, Esme was brought up by her grandmother, spent her early youth washing and oiling the snakes, and at seven became self-supporting as a ballet dancer. Later, she was a featured dancer with Pavlova, touring Europe and South America. She became a trapeze performer, a bareback stunt rider, taught herself to play the piano, became quite an accomplished artist, at one time managed a troupe of Don Cassack horsemen in outdoor performances throughout South America, and invented an act in which she danced on inverted champagne bottles.

In the meantime she found enough time to become fluent in seven languages and to marry three or four times.

Esme of Paris, a perfume company, was started at the beginning of the war years, was almost immediately successful, and passed at least the $500,000 mark as a highly profitable operation. It was, however, run with all of the emotional eccentricities of this unusual personality.

For instance, there was a time when, after several months of negotiating, Sak's 5th Avenue decided to take on Esme's perfumes on a substantial basis. An appointment was made for the buyer and a top executive of the store to meet Esme at her salon at 11:00 A.M., to be followed by a luncheon. This appointment was never kept. After waiting for more than an hour and unable to get Esme on the phone, the executives left in indignation. Three weeks later they received a short, apologetic note from Esme, saying that one of her many Boston bulls had suddenly been taken sick and had been rushed to the hospital, which had driven every other thought completely out of her mind.

The perfume company had a career in many ways similar to Esme's own way of life. The perfume rapidly became popular, the company soon became a prosperous one and, in certain parts of the country, notably the Pacific Coast, it seemed destined for a leading position.

The trouble was that nobody seemed to understand the perfume business, nobody seemed to care who bought the perfume or where or how it was displayed, and nobody had the vaguest idea of any type of conventional operation in purchasing, production, selling, warehousing, shipping, and such mundane matters as the physical conduct of a business.

After the decline and fall of the perfume business, Esme, unable to carry on any of her former activities because of three rather bad tumbles from her trapeze, became a designer of costume jewelry.

She died last month, a friendly, charming, ailing, lonely woman in financial difficulty.

The recent Bayer Aspirin decision in the New York State Supreme Court, which gives supermarkets the right to sell this proprietary medicine, produced some hard words for the retail drug trade to read:

"Obviously, there is no warrant for police power legislation giving drug stores a monopoly on economic grounds in the retail sales of pre-packaged properietary medicines sold to a great extent in these stores on a self-service basis. This is particularly so when drug stores are not restricted to the sale of drugs.

"It appears that druggists exercise no greater care than any one else in selling this drug and have no greater duty of care in selling it. This court is of the opinion that the sale of this product does not require special skills possessed peculiarly by pharmacists. The purchaser obtains no additional benefit from making his purchase in a drug store.

"The public gains nothing by the state giving a monopoly to druggists to market this product. That the monopoly is to bolster economically those who are licensed as pharmacists is not a sufficiently good reason to permit the restriction.

"There is ample economic opportunity for pharmacists as they are a necessary, important, and respected part of our communities. Their services as such are indispensable."

The man who sold ice boxes to the Eskimos has met his match. This was the opening sentence of an article on the "instant tan," which appeared recently in a Fort Lauderdale newspaper.

It seems that the new tan is doing a booming business in Florida and, strangely enough, it is the natives who are picking it up with enthusiasm.

According to this Florida newspaper, "The new champion salesman is the guy who put on Florida drug store shelves a product which promises to give you an 'instant tan' without having to resort to the natural ingredient, sunshine.

"He didn't even have to sell it. People are buying it enthusiastically, in response to claims that all you need do is rub on a milky liquid or cream, sit around for a few hours without bothering to step outdoors into the Florida sunshine, and—voila, a real permanent sun tan.

"And, according to one of the county's big chain drug stores, it's not just tourists who are rubbing on the quick-tan stuff so they can go back up north looking like Floridians.

"The natives are using it, too, men as well as women.

"There are several products now on the market. Every one of them claims it's not a dye, but none lists any ingredients on the label.

"A young woman used it to tan her legs, but then realized that if she wanted to wear a bathing suit, she had to go all the way up to meet the suit.

"The tan is supposed to be permanent. Yet, unlike a real sun tan, the Food and Drug Administration claims it will wash off with hard scrubbing, and in that sense it is not like a dye.

"One manufacturer appears to be using South Florida—of all places—as a test area for its new product."

The unanimous opinion of the Minnesota Supreme Court, which declared the 23-year-old state Fair Trade Act unconstitutional, said that the Minnesota legislature "has no right to pass a law which creates a climate in which monopolies may flourish rather than regulating or controlling monopoly power."

One of the most provocative problems of this fascinating post-war marketing era is the explosive growth in the birth rate of new products, accompanied by a very serious decrease in the life span of most old products. To say that this is one of the most serious problems of both manufacturers and retailers is to put it mildly. For many, particularly those in the retail trade, it may well be the number one problem.

This deluge of new products being poured out by practically every industry has a high percentage of products that never should have been born. Some of them are open imitations, and many of them inferior imitations of some product that appears to have the potential for success. The manufacturers of the imitations are very much like the fishermen who spend most of their time scanning the vicinity, alert to rush to any spot where someone else pulls in a fish.

A serious reaction has been building up among retailers, notably in the grocery supermarkets, against new products which lack any clear-cut, favorable reason for being added to their already over-crowded shelves.

In self defense, many of the large supermarkets are initiating buying committees whose primary function is to resist the pressure from huge corporations to accept this torrent of duplicating products, or products superficially dressed up to look a little different, or products which critical evaluation does not indicate could bring any additional business to the store, but would simply burden the inventory and the store's capital with another product serving the identical purpose as one already in stock.

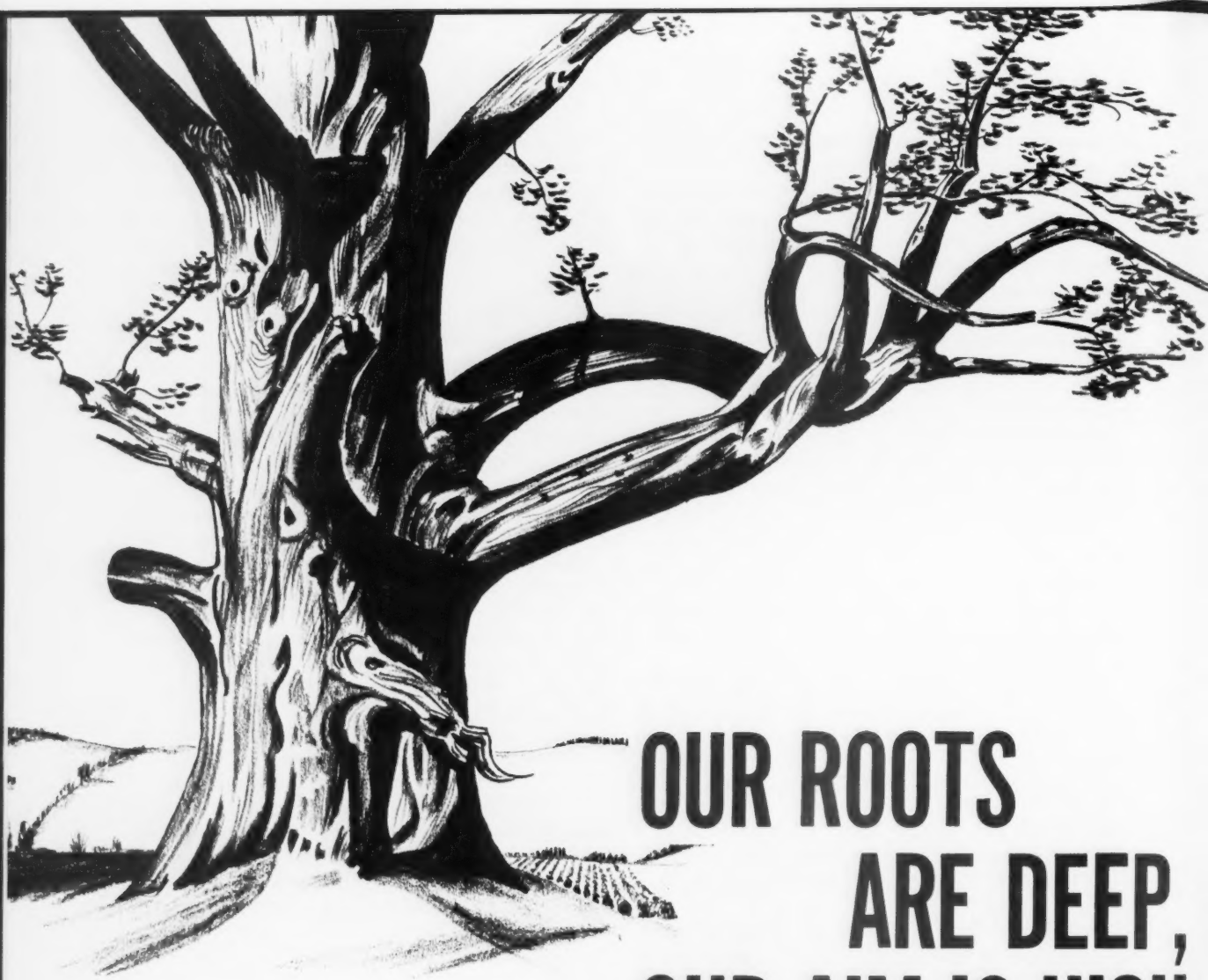
This is not to say that the new product is not essential, not only for the growth of a company or an industry, but even to hold its position in our highly competitive age. As an example of how new products are produced, a study from the Pharmaceutical Manufacturers Association stated that the industry in 1958 tested about 115,000 new substances. A great many other additional materials underwent routine preliminary screening. Out of all these only 1,900 substances, or about one out of 60, reached the final clinical testing stage. All of this resulted in a market introduction of from 20 to 30 really new products, each representing large effort in research and development. And, states the Association, only a few of this last reduced number will become commercial successes.

Of course, this is an ideal picture of a highly progressive, dynamic producing of new products. What the Association did not indicate was the vast array of duplicates that followed each of these successes or even partial successes into the retail store.

It would seem that one of the most useful questions that could be asked in any manufacturing establishment when some new idea develops which automatically points toward the development of a new product would be: Why not evaluate the old product, the established product, and see if this new idea can be applied to revitalizing it, rather than submitting a new product to the market?

This is far from a new idea. The policy is probably put in use continuously in many companies, and yet, the overwhelming flood of new products, very often directly competitive with an established product in the company line and too often based upon some trivial new idea, might better have gone unborn if this idea could have been used to bring fresh interest to an established product.

It must certainly be true that frequently an established product, which already has some distribution and which is at least recognized by the trade as a legitimate business item, could bring more profit from a new idea than could a new product with its



OUR ROOTS ARE DEEP, OUR AIM IS HIGH

but Valves don't grow on trees

Some fifteen years ago, the aerosol industry was born. Shortly after, the Precision Valve Corporation began. As the industry grew, Precision did too, in research, in discovery, in development.

Today, with over 500 employees and more than 60,000 square feet of manufacturing space devoted to over 10,000 different combinations of specifications for aerosol valves, Precision works with the industry to create and develop new aerosol designs to improve current procedures.

Now, on the threshold of further expansion, Precision rededicates itself to serving the aerosol industry and its customers. A major portion of Precision's new plant program will be directed toward research and development; its modern production facilities further improved; its friendly hand extended and dedicated to helping everyone.

Yes, Precision's roots are deep . . . its aim high!

PRECISION
SPRAY
STREAM
DROP

PRECISION VALVE CORPORATION • 700 NEPPERHAN AVENUE, YONKERS, N.Y.

attendant missionary expense. The old product may be lagging simply because all of the new ideas, all of the energetic thinking, all of the promotion money, and all of the enthusiasm of the sales force have been pouring into the company's new products.

By and large, the innovations which form the basis of new products in the perfume and cosmetic industry are, to say the least, not particularly vital or world-shaking from a research point of view. They are largly in packaging and dispensing, in a change of form, in new advertising or promotional ideas, and similar things. To put it bluntly, far too many of these new ideas are justified only because they give an opportunity to whip up enthusiasm in advertising promotions. The big question is whether this new idea, together with all the shouting and enthusiasm, could be applied just as effectively and much more economically to revitalizing an old product than to bringing out a new one.

Let's examine some of the normal developments within a company which appear under the name of research and usually end up in a new product. Let's examine it from the viewpoint of whether, with proper evaluation, the established product could make more money for the company by receiving the favors and benefits of this new idea amid all the shouting.

From time to time a new chemical or a new chemical raw material appears which adds a new function or a new physical quality or a new advertising appeal to cosmetics. This may happen, for instance, with facial creams because of vitamins, hormones, bee jelly, and other similar substances. The question here could often be: Should we incorporate this new cosmetic substance in a new cream and keep the old cream, presumably to let it languish while we build up a new and compelling image of functional value for the brand new cream? Or, should we incorporate it in the old cream with a new vigorous promotion? Most new substances offered to the cosmetic industry provide this choice.

Another approach to a high percentage of new cosmetic products is simply a change of form. A deodorant may appear as a powder, a liquid, or a stick. A shampoo may be a cream, a liquid, or a powder, and we can have a hand cream or a hand lotion, and we did try a hand cream stick.

There seems to be a continuing consumer interest merely in the changed form of a cosmetic product. And sometimes, if we take a powder and make it into a cake, we can create enormous excitement and a new volume of business.

Admittedly a change of form means, to a certain extent, a new product, but does it mean a companion piece under the same brand name for the established product, or does it mean something entirely new with a new brand name?

The package offers the greatest and the most extravagant possibilities for new products, product variations, new appeals, and new excitement in the entire cosmetic industry. Included with packaging should be a new form of dispensing. Between these two, that is, the change of package and the change in the method of dispensing, you have a high percentage of the new products that appear in this industry each year, and a very large part of the new annual enthusiasm which must be drummed up in the consumer's mind and at the point of sale.

There was a time before the last war when manufacturers approached a change in package for an established product with fear and hesitation. In those days many package changes were planned to take place over a period of two or three years with graded steps, including several packages, so that the consumer would gently and easily be lulled into accepting this new modern package without destroying the old established image of the product.

In recent years, however, nobody shows any fear complex in changing packages. The trade magazines are always reporting some case history of an abrupt change and the introduction of a new modern package, which has resulted in an immediate sales increase of anywhere from 30 to 50 per cent.

In other words, today you can abruptly and completely change the package of an old established product and, if there is any retail or consumer reaction, it is almost always that of approval.

For this reason, when a good packaging or dispensing idea comes up, why not evaluate all of the old products to see if it could be more readily and economically applied to an established product, before it is made the medium for the introduction of a new product, sometimes competing with products already in the line?

A new theme, a promotional idea, a new hunch in advertising, an inspiration in any of these fields is continually the reason for the birth of a new product. Here again, why not a firm fixed rule within a company? That is, let's evaluate our old products, let's study with care to see whether this idea can be more profitably applied to an old product than to the hazards and to the expense and often to the retail resentment of introducing a new product.

This is the era of the fantastic birth and development of new products while, at the same time, it is the era of the decreasing life span of old products. While this is exciting and stimulating and, undoubtedly, has its value, almost anyone will admit that it is costly and pretty bad economics.

It may be that we are at the top of a cycle of new product introduction because there can be no doubt that retail resentment is building up and retail management is reacting against this costly flood of new products, the vast majority of which clutter up retail shelves with a short life and a high cost to the retailer.

While evaluation of old products before authorizing a new product may be only a small part of the answer to this problem, surely it is a sound first step.

The American Management Association recently sponsored a meeting on planning new products. Representatives of several large companies presented the procedures used by their companies for new product development. No representative of a small company stood up to say that their products were all developed by inspiration or intuition.

Obviously, big business cannot depend on inspiration, it must develop a formula or a system for new product development. A typical system was the five steps outlined by Ralph Thomas, director of packaging research for Bristol-Myers Company.

First, the market is surveyed to determine sales potentials. Next, a product is "blueprinted," to find out what qualities are most desired by the consumer. Then, a careful procedure of screening pinpoints the most desired qualities.

After this, new products are consumer-tested by means of samples in a large consumer panel handled by an independent research firm. During this study improvements are made.

Finally, there is a field sales test before the product is launched.

According to Mr. Thomas, Bristol-Myers aims at a schedule of marketing three new items per year, and an average of three years is spent on product development.

This is a good basic procedure, but not as thorough and as comprehensive as the procedure of a few of the big companies in the food field.

And before we accept any procedure as adaquate for producing new products, let's not forget Mr. Ford's Mercury automobile.

Here's a recent quote from an advertising consultant to General Electric:

"Advertising cannot communicate an unwanted, unattractive or unimportant idea about the product or its manufacturer and expect to effect any improvement in the customer's acceptance of the product or the company.

"If the customer does not like the product or does not think that it is worth the price asked, there is little that advertising can do to help the situation."

A recent report from England gives Shulton 27 per cent of the English market for after-shave lotions, considerably ahead of the next runner-up, which has 17 per cent.

"Advertised brands intentionally or unintentionally attract consumers from certain social classes and this identification will tend to exclude one class or another." This was said recently before advertising and marketing circles in Belgium. It indicates that even advertising in mass media, such as television or the national magazines, is for many products really selective instead of inclusive.

The question is how much more successful would many advertisers be if they clearly identifed the particular social group to which their product appeals and sought specialized communication for an approach to this group, rather than knowingly or unknowingly seeking them through expensive mass media.

The speaker said, further, "If we know the age and sex of a market—a real one or a hoped-for one—we can already make many deductions about its motives and characteristics." For an example, the group of women between 18 and 25, who are particularly good cosmetics consumers.

"Women in this group are strongly oriented to the non-essential aspects of what they buy: They want nice-looking packages, an air of lightheartedness and pleasure about the product in its colors, its design and its finished look; they are not only more innovating than older (and younger) women, but they also have a bit of independent incentive to try something a little different from what they grew up with."

We have often stated in this column that a high percentage of the progress in new cosmetic product development, in packaging, and in factory efficiency has come from the suppliers.

However, only rarely is the supplier officially recognized for his service. Now the members of the Purchasing Agents Association of Chattanooga have decided not only to recognize this service, but to try to get even more of it.

The procedure of these buyers is to hold a monthly panel meeting in which suppliers are invited to make suggestions and criticisms. According to reports, the first panel has been a howling success. For instance, a representative of the Container Corporation of America told these buyers:

"If one of your gentlemen should wish to ship your product 500 miles via truck, we can simulate this shipment in one of our laboratories and tell you just how it will arrive at destination under normal shipping conditions.

"Also, if you would like to ship some product 2,000 miles by rail, we can simulate this shipment in our laboratory and tell you how it will arrive under normal shipping conditions.

"Some of the other things we can tell you are how many boxes high you can stack your product before you can expect failure from the bottom container. We can tell you what moisture penetration you can expect, or how much moisture absorption will take place in your container.

"Let your box maker design a container for you by scientific methods that will not leave your product underpacked or overpacked. If it is underpacked, you will increase your cost by damage or customer ill will. If it is overpacked, you are needlessly spending extra money on containers."

Set-Up Paper Box Awards

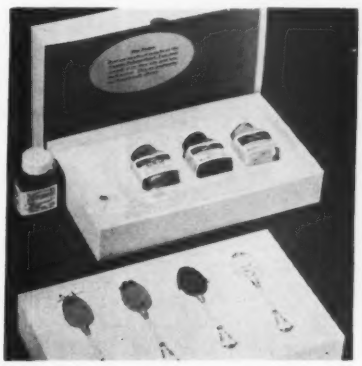
The National Paper Box Manufacturers Association has announced its awards for this year's set-up paper box competition. Ninety-nine awards were made this year in each of 26 product categories, out of the 2,406 entries received, by the eight judges. There were 32 first awards, some of which are shown below, and 67 excellence awards. All were displayed during the association's convention, which was held in New Orleans, at the Jung Hotel.

The judges this year were: Henry Aemisegger, retired, formerly of G. A. Bisler Company, Philadelphia, Penna.; Howard Berger, head of promotional package development, Smith Kline & French Laboratories, Philadelphia, Penna.; Frank P. Coons, packaging engineer, Johnson and Johnson, New Brunswick, N. J.; John J. Dillon, director of publicity, Grover Cronin, Inc., Waltham, Mass.; F. William Koehl, Jr., president, The William Koehl Company, Cincinnati, Ohio; Luke H. Lipka, industrial designer, William H. Simkins Studios, Philadelphia, Penna.; William Longyear, associate dean and director of professional service, Pratt Institute, Brooklyn, N. Y.; and William V. Morphy, supervisor of service, R. H. Macy Company, New York, N. Y.

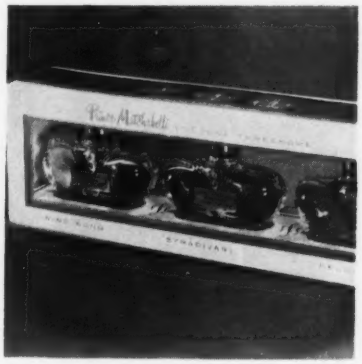
Merchandising appeal was the primary consideration for the awards, but additional awards were made to those boxes judged outstanding in display characteristics, ingenuity of construction, and in surface design and execution.

The panel of judges cited the versatility of this year's entries in effectively combining product protection, counter display, and merchandising appeal—the three primary requisites for retail packages. They observed that this year boxes utilized a greater variety of colors, more photography, and more open windows. The upward trend of multiple-unit packages has continued, as has also the box "families."

The judges also remarked the increase in the number of boxes aimed at the gift shopper, which they believed emphasized the upgrading influence of quality packaging. Article identification was improved this year, they noted, as well as the ability to display the merchandise to win attention.

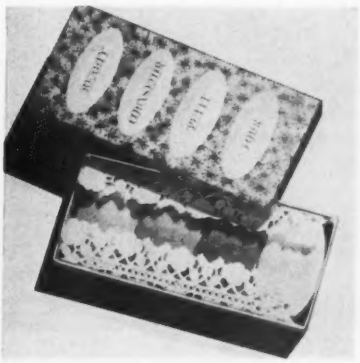


Triaminic Pediatric drug promotion box, first award in drug mailing and promotional boxes, by Packaging Corporation of America, for Smith-Dorsey Company, holds bottles in heat-formed styrofoam platform, smiling spoons on cover.



Prince Matchabelli Cologne threesome box, first award in cosmetics rectangular boxes, by Heminway Corporation, bound in red velvet ribbon embossed with crowns on white; white, gold platform within.

Marcelle Dusting Powder, first award in round cosmetic boxes, by F. N. Burt Company, Inc., for the Borden Company, designed by Robert Buechert uses black, pink, blue design for a memorable exterior and easily removed lid.



Beauty Counselor soap box, first award in soap boxes, by Stecker Paper Box Company, uses floral pattern with the soap colors, is a simple effective package. With ovals on cover allow for identification.

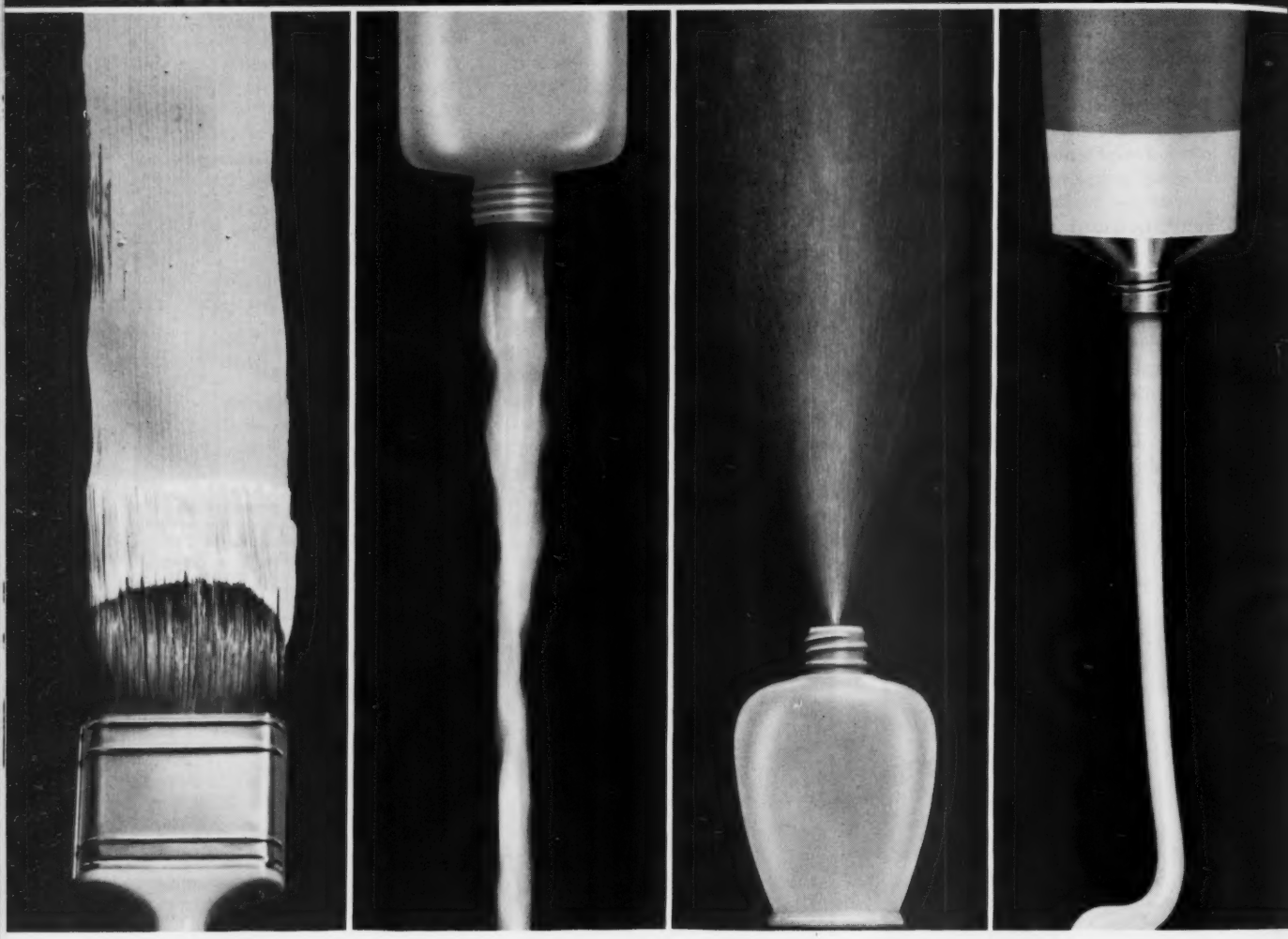
Procter & Gamble's "knock on any door," first award in promotional boxes, by C. W. Zumbiel Company, a novelty with opening doors, silver knobs, product information within; samples are on a velvet background.

Hydeltrasol drug mailer box, first award in best surface design, by C. Albert Sauter Company, Inc., for Merck Sharp & Dohme, designed by Andrew B. Schmith. Designs indicate skin diseases samples inside are to alleviate.

Rediplete Polyvitamin box, excellence award in drugs and pharmaceuticals, by C. Albert Sauter Company, Inc., for Merck Sharp & Dohme, a package treat for children—animal elongates as it opens up.

If your product can be...

BRUSHED **POURED** **SPRAYED** **SQUEEZED**



...aerosol packaging may be more profitable for you

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AEROSOLS BOOST COTY SALES. By packaging L'Aimant fragrance in aerosol form, Coty created a new "spray mist" product that is outselling the original bottled L'Aimant toilet water 2 to 1!

*Freon and combinations of Freon- or F- with numerals are Du Pont's registered trademarks for its fluorocarbon propellents.

NEWS and VIEWS

BY TED KLEIN PUBLIC RELATIONS DIRECTOR*

Boca Raton Meeting

In April the leaders of the pharmaceutical industry met in full force at Florida's Boca Raton Hotel for what turned out to be a serious and vital three days. The occasion was the second annual meeting of the Pharmaceutical Manufacturers Association.

The undercurrent of the meeting was quite naturally Senator Kefauver and the headlines which have resulted from his investigation. But this was real concern, not fright, not helpless terror.

It is always interesting to me to watch the captains of an industry at work. There is a quality that is elusive and difficult to describe which seems to emanate from these men; many had humble beginnings and have labored to create complex industrial organizations.

The men who went to Boca last month know what a job they have in combating the ill will generated by the Washington hearings. They know that they have a long, thankless job to do in public relations, and at the same time, they are expected to keep their companies operating at profit in a rough business.

There was an excitement generated by these individuals. There was a mood of firm, competent decision emphasizing their agreement on the job to be done. No grumbles were heard when the new dues schedule was announced . . . some firms will have to pay over $10,000 more this year than they did last year for their membership in the P.M.A.

Dr. Jules Backman, Research Professor of Economics at New York University, gave what many thought was the best talk of the meeting. He spoke about the economics of the drug industry with particular reference to the Kefauver investigation. "Sober appraisal must take the place of sensationalism," he warned, "if the contributions of the drug industry to our national economy are to be evaluated and harmful legislative actions are to be avoided."

The men who met at the Boca had made that appraisal before they got there, and now, I think, you will notice an important effort devoted to telling our industry's story, to the public and the physician.

Without Hope of Return

The April issue of *New Medical Materia* reports a survey it conducted on the number of drugs produced by the pharmaceutical industry for rare medical indications—a market far too small to warrant producing a product, yet one that morally demands producing without hope of financial return.

Thirty-five products are listed in the survey, from Lilly's Acetyl Strophamthidin Ampules, which is indicated for the 150 known cases (1959) of critical congestive heart failure, to the 750 cases of anesthesia in the head, neck, and other indications for Pfizer's Viadril.

This report, printed in a medical magazine which goes to 150,000 physicians, is an excellent example of informed public relations. I only wish there were a way to see that the same information was beamed to the entire population of this country. Here, in fact, is the sort of ammunition we need to counter the barrage of anti-industry publicity which is still running in our newspapers—courtesy of the Senator from Tennessee.

With their tremendous facilities for communication in all media, I hope the Hearst organization, which publishes *New Medical Materia*, will give space to this fine story.

The Impact of Medical News

One of the most learned and skillful science writers in the business is Robert D. Potter, executive secretary of the Medical Society of the County of New York, and editor of *New York Medicine*. In a recent lecture at the School of Journalism, Michigan State University, Mr. Potter spoke about "The Impact of Medical Reporting on the Public."

He comments lucidly on the quandary of releasing new product or research information not only to the physician but also to the public:

"An informed public is an alert public and in medicine such a public has the virtue of asking questions of physicians which makes them, in turn, alert to medical progress . . . a physician in a busy practice cannot always find the time to keep up with every facet of discovery in his host of medical journals. He means to. He does his best. But the flood of information is overpowering."

Potter is very much for the release of information on new drugs and new methods of therapy, if the reporting is responsible. A natural consequence of this responsible reporting is evident when a patient walks into his physician's office with a clipping from a medical meeting that happened yesterday and says, "Doctor, what about this new treatment? Does it apply to me?" Potter believes that "the physician is going to take time out to relate the new work to his patient care," and that the consequence is swifter application of new medical information.

Cause of Death

Heart disease, cancer, strokes, and accidents accounted for 71 per cent of all deaths in 1958, according to the Public Health Service's National Office of Vital Statistics.

Of the 1,647,886 deaths that occurred in 1958, the number and rates per 100,000 population for the four leading causes are as follows:

	Number	Rate
Heart disease	637,246	367.9
Malignant neoplasms, or cancer	254,426	146.9
Vascular lesions (chiefly strokes)	190,758	110.1
Accidents, all forms	90,604	52.3
Motor-vehicle accidents	36,981	21.3
All other accidents	53,632	31.0

It is interesting that 1958 accidents, motor vehicle and others, total more than the 57,439 deaths caused by influenza and pneumonia (such accidents not listed in the top four causes of death). Why there isn't a national foundation such as we have for cancer and heart research dedicated to eliminating the 36,981 deaths due to motor vehicle accidents, I don't know. The National Safety Council does its bit each holiday, warning motorists about death on the highways, but only by cautioning drivers that "800 people will die on the road this week-end," according to the National Safety Council. Is this enough?

*Paul Klemtner & Company, Inc.

Patent thoughts and trends*

BY THOMAS CIFELLI, JR., PATENT ATTORNEY†

At the outset, it is believed wise to face squarely up to facts and to consider candidly that perfumers and patents are virtually strangers to each other. Very few patents are obtained by perfumers. It is, therefore, rather astonishing, at first blush, to find a paper on patents in a symposium given before an organization of perfumers.

Implicit in the foregoing statement is a distinction between perfumers and chemists. While many perfumers also have a chemical background as part of their training, we here consider as perfumers those engaged in the odor evaluation or compounding of fragrances. Those who are engaged in the research, development or actual manufacture of chemicals, isolates, etc., even though these products are intended for use on account of their odoriferous properties, are here considered as chemists.

Thus, it can fairly be said that while there have been many patents issued in the field of fragrances, the developments in question have been creations of chemists rather than perfumers. A few such developments may be noted: large cycle ketones, cyclamen aldehyde, α-irone synthesis, and the new indan and tetrahydronaphthalene musks.

When one gives the matter a little thought, it does seem strange that perfumers, who are considered creators, do not find use for patents, which are legal instruments to reward creators. Let us consider some of the possible reasons which may help in explaining the existing situation.

Perhaps perfumers are not really creators! Yet, when one considers the tremendous number of odor notes in the perfumer's armamentarium compared to the handful of musical notes the composer need concern himself with, it is not seen how the composer can be considered a creator and the perfumer denied this appellation.

Perhaps the perfumer is more secretive than others. This secrecy is caused by the perfumer's sincere belief that his formulas are his priceless possession, to be shared with only a trusted few. To make a complete disclosure of a formula for all the world to see is unthinkable. Such an attitude is understandable. Yet one wonders whether the perfumer himself really believes it is necessary to envelope his work in such secrecy. For one thing, witness the excellent books which do give detailed information on perfume formulations. Also, no amount of secrecy can prevent successful copying in the great majority of cases. Further, secrecy vanishes as a protection to the owner of the secrets, that is, the perfumer's employer, if the perfumer changes jobs. Then too, the value of disclosures and common consideration of perfumers' problems in certain areas is recognized by the very existence of the American Society of Perfumers.

Another possible explanation of the lack of contact between perfumers and patents is that the American perfumer looks to the old French perfume masters for his guide posts as to his heritage. If that is done it will be found that little use of the French patent laws has been made by French perfumers. A consideration of why this has been the case would be interesting but, since this paper is concerned only with the American perfumer and American patents, we shall have to forego the temptation.

On the other hand, it may well be that much of the lack of contact between perfumers and patents is attributable to the fact that perfumers cannot be expected to know anything about patents if no one has taken the trouble to explain what patents have to offer to the perfumer. It is this thought which motivates this entire article.

A U.S. patent gives the patent owner the right to exclude all others from making, selling or using the patented invention in the United States of America and its territories for 17 years from the date of grant. A U.S. patent gives no protection in foreign countries. However, importation of foreign-made patented products, or products made by a patented process, can be prevented by the owner of the U.S. patent.

The natural question is: What types of subject matter with which the perfumer concerns himself are open to patent protection? These may be summarized as follows: (1) new chemicals, (2) new perfume ingredients, (3) new perfume formulations, (4) new containers for perfumes.

New Chemicals

As already noted, new chemicals are usually due to the creation of chemists, not perfumers. However, there is no law against a perfumer conceiving a novel chemical compound of perfume value. Rather, this is a distinct possibility, considering the chemical background of many perfumers. To be patentable, the chemical does not have to be a radically new one. For example, U.S. 2,875,131, covers 4-tertiary butyl α-methyl hydrocinnamic aldehyde, which differs from the well-known cyclamen aldehyde in having a tertiary butyl group in place of an isopropyl group. In spite of this small chemical difference, the patented compound is much stronger than the cyclamen aldehyde. The important thing for purposes of patenting new chemicals is that they should possess unpredictable properties as compared with closely related known compounds.

It is perhaps too little known that for one, including a perfumer, to be an inventor in the eyes of the U.S. patent law it is *not* necessary for him to do any of the *actual* work in preparing the compound. For example, assume a conference between a perfumer and a chemist on the evaluation of a certain material. If the perfumer were to say: "Maybe, if we made the same compound except with an alpha-methyl, the perfume properties would be a lot better." The chemist then goes ahead and prepares the compound,

*This paper was presented at the Sixth Symposium of The American Society of Perfumers, Inc., held at the Essex House, New York City, April 28, 1960.

†Richards and Cifelli, Newark 2, New Jersey.

and it does turn out to be materially better. The perfumer would be the inventor. In some cases, of course, they might be co-inventors.

Even in those cases where the perfumer is not an inventor, he may be of invaluable aid in obtaining patent protection. No one is better qualified in drawing distinctions based on odor between the asserted-ly patentable new compound and one known to the world. Suggestions for simple experiments to bring out the olfactory superiority of the claimed compound and the performing of the actual tests are in the perfumer's province. The file of the aforementioned U.S. 2,875,131 shows that it was an affidavit of a perfumer member of this organization which set forth facts showing the unexpected superiority of the claimed compound over cyclamen aldehyde, and which resulted in allowance.

A tremendous problem to all those who attempt to obtain patent protection on new chemicals based on their odor properties exists today; and if it is to be solved, only the perfumers will do the job.

The Patent Office takes the position that if a known compound possesses any desirable odor, regardless of its nature or its lack of commercial significance, no patent will be granted on a closely related compound such as homologs or isomers where the argument is made that the new compound possesses a different odor of a much more desirable character, say a fine jasmine-like odor, than that of the known compound, say, a weak citrus note. The commercial value of the new compound may be hundreds of times greater than that of the known compound, but the Patent Office will not be moved. Since there is no way of measuring any quantitative difference between the odor qualities of the two compounds, protection on a valuable invention cannot be obtained.

The irony is that if the new compound possessed the same odor as that of the known compound but to a much greater extent, a patent could be obtained. Or, the new compound need not be stronger, so long as it possesses some other improved quality, such as increased stability.

It is believed that this organization, if it tackles this job and sees it through, could do much to improve the situation. It would seem that some hard "ground work" should be done in order to set up an incontrovertible, scientific argument that there *is* invention involved in making a chemical with a certain, desirable and different odor from that of a known isomer or homolog. The Patent Office recognizes that invention is involved in providing an isomer or homolog which posseses a different therapeutic utility, say as an anti-convulsant, where the known isomer or homolog also possesses a therapeutic utility, say as an anti-febrin. Indeed, the Patent Office has even recognized patentability in administering a certain feed to fowl for treatment of a specific infection even though there was a publication which showed the use of the same medicine for the treatment of malaria in ducks. *Ex parte Zbornik and Peterson*, 109 USP 508 (1956).

Taking a leaf from the drug industry, it may well be that frank discussions of this problem with responsible Patent Office officials may prove helpful. Out of such discussions should come at least a clear understanding by the Patent Office of the problem faced by perfume interests. As all know, such an understanding often greatly expedites the solution of a problem.

New Perfume Ingredients

This category refers to the use of known materials in perfumery for the first time. In other words, this is the situation where a material has been known for some time but has never before been used as a perfume ingredient. Obviously, since the perfumer is the one who has the last say as to what goes into a perfume, he is in a good position to make inventions in this field.

This category offers a broad area of patent protection, for, although many materials actually are employed or have been suggested for perfume use, they must be only a small percentage of the total known materials. A defeatist can of course suggest that it is impossible to try all known compounds. Quite so. The point is that the perfumer, if he is discerning—and lucky—can verily pick the "needle out of the haystack." Is this asking too much of the perfumer? One thinks not, especially when it is recalled that perfumers of a past era thought of using such unlikely materials as skatole, indole, ambergris and civet extract, to mention a few.

Broadest protection can be obtained where the new perfume ingredient can be employed in various representative perfumes, as is shown by U.S. Patent 2,918,412, which contains the following claim: "A perfume oil having 3-methyl-1-nonyn-3-ol as an olfactory ingredient."

Under the present U.S. patent law, Title 35, U.S.C., section 271 (c), if the new perfume ingredient in such a claim is not a staple article of commerce and is not capable of substantial noninfringing use, the patent affords about as much real protection in the perfume field as if it were on the ingredient itself as a new compound.

New Perfume Formulations

This area is one wherein the perfumer alone operates. However, since perfume formulations as a rule involve the use of many known perfume ingredients and substituting one ingredient for another is usually a rather easy thing to do, the chances of obtaining worthwhile patent protection here are usually absent. An exception would be the case where the combination of only a few such ingredients gives an unusual result. In such a case, coverage may be obtained on the combination.

In the general case, where a large number of ingredients is present, patent protection may be meaningless, as the patent claims can easily be avoided by omitting some of the claimed ingredients or by substituting a nonequivalent ingredient for the one claimed.

New Perfume Containers

The perfumer often plays a significant role in the design of ornamental containers for perfume formulations. Design patents, covering unusual bottle desgins for example, are available. Such patents give protection only on the appearance of the patented design and colorable imitations thereof, and are avoided rather easily.

Functional containers, such as atomizers for perfumes, lend themselves to mechanical patent protection, as distinguished from mere ornamental design protection. While

(*Continued on page 697*)

DRUG & COSMETIC CATALOG 1960-61 EDITION

The only comprehensive reference book published biennially exclusively for the Drug & Cosmetic Manufacturers over the past 29 years. New edition will be published in the spring of 1960.

What's in it?

Alphabetic lists in separate sections giving SOURCES OF SUPPLY FOR ALL RAW MATERIALS, MACHINERY, PACKAGES AND PACKAGING MATERIALS USED BY OUR INTER-RELATED FIELDS.

AEROSOL SECTION listing all contract fillers and sources of supply for all ingredients and machinery for the production of Aerosol packages.

Indices listing TRADE MARKS, TRADE ASSOCIATIONS and TRADE PUBLICATIONS.

A list of all PRIVATE FORMULA houses.

LEGAL SECTIONS AND STATISTICAL INFORMATION showing import and price movements on all raw materials for 10 years past.

What markets are served?

COSMETIC: Over 900 companies manufacturing perfumes, cosmetics, toilet preparations and similar products. These include certain wholesalers and chain stores not primarily associated with the industry but who are manufacturing products for this group.

DRUGS: ETHICAL AND PROPRIETARY—A 3½ billion dollar industry showing one of the most phenomenal growth patterns in American industry.

ASSOCIATED COMPANIES: Subsidiaries or divisions of companies in other industries participating and using raw materials, packages, machinery and equipment of this industry.

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KOPPERS PLASTICS

KOPPERS

Molder: Gilbert Plastics, Inc., Kenilworth, N.J.

From left to right: Dr. Charles H. Schramm, scientific director of the J. T. Baker Chemical Company; Edmond V. Tyne, sales manager for the Harchem chemical department, Chemical Divisions, Wallace & Tiernan Inc.;

William G. Foley, vice-president, Dragoco, Inc.; and Thomas F. LaPrelle, who has been appointed to the metropolitan sales staff of Fleuroma, Inc., covering New York City and the surrounding Eastern Seaboard area.

NEWS...

Appointments and Promotions

The J. T. Baker Chemical Company has appointed Dr. Charles H. Schramm scientific director responsible for both the Research Laboratories and the Control Laboratories, as well as chairman of the Standards Committee. For the last two years he has been director of research. He formerly directed the organic chemical research section of the Lever Brothers Research Laboratories.

Edmond V. Tyne has been appointed sales manager for the Harchem chemical department of the **Chemical Divisions of Wallace & Tiernan Inc.** Mr. Tyne replaces M. F. Antonovich, who now heads Harchem's purchasing department. Mr. Tyne had been with Minnesota Mining and Manufacturing Company, most recently as eastern regional sales supervisor for the Chemical Divisions.

Dragoco, Inc., has appointed William G. Foley as vice-president, with over-all responsibility for domestic sales. His headquarters are in the New York City offices.

Thomas F. LaPrelle has been appointed to the metropolitan sales staff of **Fleuroma, Inc.** He will cover New York City and the surrounding Eastern Seaboard area. Mr. LaPrelle formerly served as field salesman in the finished toilet goods industry.

Edward B. Libber has been named a vice-president of **Lakeside Laboratories Inc.** For the past six years he has supervised the sales of Lakeside's products through the company's two subsidiaries, Lakeside International and Lakeside Export Corporation. He is to be responsible, in his new position, for the firm's expanding foreign operation. Prior to joining the firm in 1954, Mr. Libber spent six years in the Near East and Europe for the Schering Corporation.

The board of directors of **Noxzema Chemical Company** has elected Norbert A. Witt executive vice-president, a new office, and Dr. John C. Bauer a member of the board. Deo D. Dunham has been elected vice-president and sales manager and J. Edward Fry, assistant to the sales manager. Mr. Witt has been with Noxzema since 1955 as vice-president in charge of sales; Mr. Dunham, since 1949, most recently as assistant sales manager; and Mr. Fry has been a sales representative for Noxzema in the Midwest.

Abbott Laboratories has made Edward P. Brandes head of scientific relations. He will be responsible for relationships with the Food and Drug Administration, state departments of health, and similar agencies. He has been with Abbott since 1949.

William B. Thompson has become assistant to Dr. William A. Bittenbender, director of production and engineering of **Merck Sharp & Dohme, Division of Merck & Company, Inc.** Formerly personnel manager of the division, he joined the company in 1946.

Dr. S. R. Bozeman, vice-president of the **Pitman-Moore Company** and director of its biological laboratories, has been named to the board of directors of **Allied Laboratories (Canada) Ltd.,** which, along with Pitman-Moore Company, is a subsidiary of **Allied Laboratories, Inc.** Dr. Bozeman joined Pitman-Moore in 1952 and was named a vice-president five years later. He is secretary of the Biological Section of the Pharmaceutical Manufacturers Association, and vice-president of the International Committee for Microbiological Standardization.

John H. De Luca has been appointed manager of the **Phillips' Milk of Magnesia** plant at Gulfport, Miss., of **Glenbrook Laboratories Division, Sterling Drug, Inc.** He has been purchasing agent of the Gulfport plant since 1952, and acting plant manager since last December. He had been personnel manager of the main Chas. H. Phillips' plant at Glenbrook, Conn. He joined Sterling in 1946.

Ten veteran salesmen with **The Dow Chemical Company** have been promoted to the position of account manager, a new classification established to provide "recognition and incentive for outstanding salesmen who are not engaged in supervisory work." The ten are Russell W. Haeger and Douglas H. MacIntosh, both with the chemical sales staff, Detroit office; William M. Jackson, plastics, Atlanta office; Theodore G. Moore, chemicals, Minneapolis office; Herbert A. Townsley, chemicals, Charlotte, N. C., office; James C. Wheeler, chemicals, Houston, Texas, office; and Denis J. Mullins, Stanton D. Smith, Frank J. Ward, and Henry B. Weisl, all with plastic sales, New York office.

Dr. George G. Rowley, an instructor of physiology at the College of Physicians and Surgeons of Columbia University, has been appointed to the **Colgate-Palmolive Company's Biological Research Laboratories** at

From left to right: Eldridge J. Black, vice-president and general manager of Stepan Chemical Company's newly formed Industrial Chemicals Division, and Walter N. La Porte, director of manufacturing for the new division; Robert Elias, sales manager for Felton Chemical Company; and Dr. Charles E. Dutchess, who has been elected to the board of directors of Zotox Pharmacal Co., Inc., and appointed its chief medical advisor.

Eldridge J. Black has been promoted from vice-president of sales for **Stepan Chemical Company** to vice-president and general manager of the company's newly formed **Industrial Chemicals Division,** which will manufacture surface-active agents, methyl esters, nonyl phenol, and p-tertiary butyl phenol. Walter N. La Porte has joined Stepan as director of manufacturing of the new division. Mr. La Porte was previously manufacturing superintendent for Monsanto Chemical Company.

The **Felton Chemical Company** has appointed Robert Elias sales manager, with full charge of all domestic sales. He has been with Felton for many years.

Dr. Charles E. Dutchess has been elected to the board of directors of **Zotox Pharmacal Company, Inc.,** and appointed chief medical adviser to the company. Consultant to the drug industry since 1955, Dr. Dutchess was formerly vice-president and medical director of Schenley Laboratories, and a director of that company.

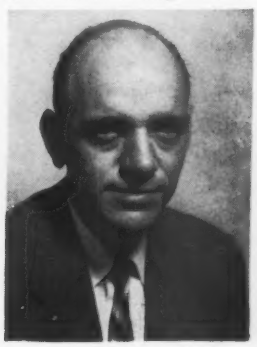
Edmund Mendell has joined **Schieffelin & Company** as plant superintendent. During the past 14 years, Mr. Mendell has held various pharmaceutical production, and research and development positions with E. R. Squibb & Sons, Division of Olin Mathieson Corporation. At Schieffelin he will assist Franklin Bivins, director of production.

Jesse G. Heiges, secretary and general counsel of **Chas. Pfizer & Co., Inc.,** since 1956, has been elected a director of the company. A member of the Pfizer legal staff since 1950, Mr. Heiges is also a director of the United States Life Insurance Company, and a member of the American, New York State, and New York City Bar Associations. Pfizer production appointments include Dr. Gerard Van Halsema as manager of pharmaceutical products manufacturing at the Brooklyn plant; Dr. D. Shelton Mabry, who succeeds him as production manager of biologicals at the company's Terre Haute plant; James S. Legg, now in charge of the polio vaccine promotion, Dr. Mabry's former position; and Dr. Sami Mayyasi, now responsible for process improvement in the biologicals production group. Dr. Van Halsema has been with Pfizer since 1953. Dr. Mabry has been in biologicals production since joining the firm in 1957, and Mr. Legg has been a supervisor in production of biologicals since 1957.

Cornelius W. Pettinga has been promoted from his position as head of the biochemical research department of **Eli Lilly and Company,** where he has served since 1953, to a newly created position as assistant to the vice-president in charge of research, development, and control. Robert F. Miller has returned from 18 months with a subsidiary of Lilly in Argentine to assume new duties as director of Lilly's glandular products manufacturing division.

Mead Johnson & Company has made two major changes. Dr. Lloyd Pressel has been promoted to director of organization planning, replacing L. J. Aggerbeck, who has resigned. Dr. Pressel has been director of personnel development since joining the company in 1957. Promoted to direct personnel development is Allan C. Siebers, who has been personnel development manager.

From left to right: Edmund Mendell, plant superintendent, Schieffelin & Company; Jesse G. Heiges, elected a director of Chas. Pfizer & Co.; Dr. Cornelius W. Pettinga, assistant to the vice-president in charge of research, development, and control at Eli Lilly and Company; and Robert F. Miller, who has returned from Argentina, to assume new duties as director of Lilly's glandular products manufacturing division.



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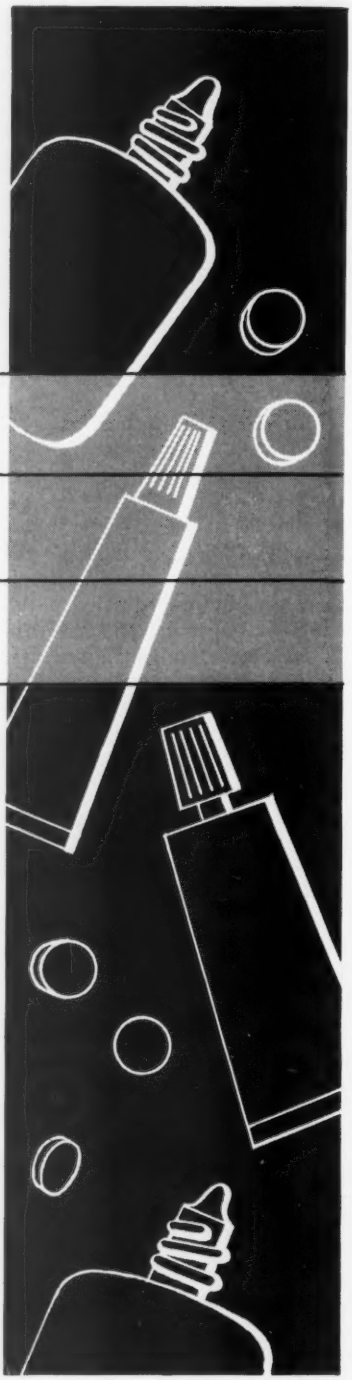

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From left to right: Thomas J. Rowe, financial vice-president and treasurer of Knox Glass, Inc.; Edward B. Denton, who has joined Clairol Incorporated as national retail sales manager; William Q. Steinmetz, now Norwich products manager for the International Division; and E. L. Violon, who has been appointed sales manager of the Norwich Pharmacal Company's newly established chain-wholesaler division of the firm.

Thomas J. Rowe, formerly vice-president of operations for ACF Industries, Inc., has been elected financial vice-president and treasurer of **Knox Glass, Inc.** He succeeds Alexander W. Lansberg, who was recently promoted to serve as vice-president and executive assistant to the president of Knox.

Edward B. Denton has been appointed national retail sales manager of **Clairol Incorporated.** Mr. Denton was previously national sales manager of Lanolin Plus, and held a similar position at Pharmacraft.

William Q. Steinmetz has been appointed products manager for the **International Division, Norwich Pharmacal Company.** He will have charge of marketing the firm's proprietary products in countries overseas. Mr. Steinmetz was formerly sales and advertising supervisor of northern Latin-America for Miles Laboratories. Norwich has expanded its proprietary drug sales operations with the establishment of a chain-wholesaler division, of which E. L. Violon is sales manager. E. L. Zimmerman continues as sales manager of the sales division.

Maxwell Littman, M.D., Ph.D., has been appointed scientific director of **Endo Laboratories,** a newly established position, and Nathan Weiner, Ph.D., has been made director of research. Dr. Littman was formerly a research associate at the Mount Sinai Hospital in New York City, and affiliated with St. John's University in New York as a research professor of microbiology. Dr. Weiner joined Endo in 1940, and has been director of laboratories since 1959.

Newly appointed as research director of **Wilson Laboratories Division of Wilson & Company, Inc.,** is Dr. Edgar A. Steck. After chemical research at the Sterling-Winthrop Research Institute, Dr. Steck joined Johnson & Johnson as medicinal group leader in chemical synthetics. In 1959 he was transferred to a similar position with McNeill Laboratories when they acquired Johnson & Johnson.

Frank Seeland has been elected president of **Dr. LeGear, Inc.,** succeeding Dr. Daniel H. LeGear, who has retired because of ill health. Mr. Seeland continues as vice-president in charge of the Farm Chemical & Insecticide Division of S. B. Penick & Company, which recently acquired controlling interest in Dr. LeGear, Inc. Mr. Seeland has been with Penick since 1952, serving as vice-president since 1955.

Ted Klein, public relations director of **Paul Klemtner & Company, Inc.,** and author of our "News and View," has been named vice-president of the Klemtner firm. Mr. Klein joined that agency four years ago. He had been with Pharmaceutical Advertising Associates and, earlier, Murray Breese, Inc.

Philadelphia Ampoule Laboratories, Inc., has appointed Milton Fine national sales manager. Mr. Fine has been New York regional sales manager for the past four years.

Matt C. Hunter, Ph.D., formerly with Smith, Kline & French and Monsanto Chemical Company, has been appointed laboratory director for **Carrtone Laboratories, Inc.** He will be responsible for product assay and control, as well as assisting in new product development.

Baxter Laboratories has named Robert T. Skyles an artificial organs specialist. Mr. Skyles has been with Baxter for six years in sales positions.

From left to right: Nathan Weiner, Ph.D., promoted to director of research, Endo Laboratories, and Maxwell L. Littman, M.D., Ph.D., who has joined the company as scientific director; Dr. Edgar A. Steck, research director, Wilson Labs.; Frank Seeland, president, Dr. Le Gear, Inc.

Hyland Laboratories has appointed Edwin P. Lewis and Charles L. Quintero to the marketing division, Mr. Lewis as sales promotion manager, and Mr. Quintero to the market research department. Mr. Lewis was formerly Los Angeles sales representative, and Mr. Quintero was international export coordinator for the market research department of Merck Sharp & Dohme.

Martin Smolin has been appointed chemist in the research laboratories of **American Cholesterol Products, Inc.** He was formerly associated with the analytical laboratories of Stauffer Chemical Company. Also, Shirley Ann DeRagon has been made formulation chemist in the technical service department. Miss DeRagon was formerly a research chemist at Johnson & Johnson.

Helene Curtis Industries, Inc., has appointed Edmund Kowalczyk as director of industrial relations. He had formerly served in a similar capacity with Ethicon, Inc., a Johnson & Johnson affiliate.

Dr. Ross V. Sayers has been appointed medical director of **George A. Breon & Company.** Dr. Sayers had been assistant director of medical research for Winthrop Laboratories.

The Realistic Company has been joined by Donald J. McInnes as north central district manager covering northern Illinois, Wisconsin, Minnesota, and North Dakota.

John M. Welch has been appointed sales representative in the **Dodge & Olcott** Los Angeles office.

D & O Scholarship Award

The plaque and $1,000 award to encourage students to take undergraduate work leading to a degree in food technology, engineering, or science, was recently given at the Massachusetts Institute of Technology. Dr. Jules Bauer, vice-president of Dodge & Olcott, made the presentation to Edward Weiss, M.I.T., at the Annual Students' Night Meeting of the Northeast Section, Institute of Food Technologists, under whose auspices the scholarship is presented each year.

Ketchum Buys Bonis Firm

Ketchum & Co., Inc., has announced the acquisition of the Bonis Wholesale Drug Company of Newark, N. J., for undisclosed amounts of cash, long-term subordinated notes, and common stock of Ketchum. To be known as the Bonis Division of Ketchum & Co., Inc., it will continue operations at the Newark address, making available full-line wholesale drug service to Newark and Essex Counties in New Jersey. Twenty-two major drug and pharmaceutical lines are to be added to those previously supplied by Bonis.

Sol Garfinkle, Bonis president, is retiring, but his five brothers will continue their association with the Bonis Division, in key positions.

HNI Director to Speak

Marc Woodward, Executive Director of Health News Institute will speak at the coming meeting of the Society of Pharmacists in Industry. The meeting is to be held on Monday, May 23, at the New York Academy of Sciences, New York City.

Present at St. John's University College of Pharmacy's special seminar series in aerosol technology, left to right: David Tillotson, isotron propellant technical services, Pennsalt Chemical Corp.; Dr. Samuel Livengood, assistant director, Union Carbide Chemicals Co. Technical Service Laboratory; Dr. Fred Reed, head, aerosol division, Freon Products Laboratory, E. I. DuPont de Nemours and Co.; Dr. John Sciarra, associate professor, pharmaceutical chemistry, St. John's University College of Pharmacy; Lloyd Flanner, head, technical service laboratory, General Chemical division, Allied Chemical Corporation. More than 70 from the industry attended.

New trademark of International Flavors & Fragrances Inc., the company name of the merged van Ameringen-Haebler and Polak & Schwarz firms, which took place a year ago. It was developed by Peter Schladermundt Associates.

Summer Program on Management

More than 1,500 executives are expected to take part in the American Management Association's sixth annual summer program to be held at Colgate University, Hamilton, New York, from July 6 through August 31.

A new aspect this year is to be two groups of three-day meetings to be held from July 6 through 9 and August 29 through 31. All other programs will last five days each.

Courses include management, marketing, cost reduction, executive action, field management of salesmen, and product management. More than half the meetings are to be workshop sessions and orientation and round-table sessions are planned.

Enjay Merges with Humble Oil

The Enjay Company, Inc., petrochemicals firm, will become the Enjay Chemical Company, a division of Humble Oil and Refining Company, on May 31. According to the announcement, the new division will be directly responsible for both marketing and coordination of the Humble Company's chemical products activities throughout the U. S. Enjay will also sell chemicals to Esso Export Corporation for foreign distribution.

Enjay headquarters will be in New York City, and J. E. Wood, III, former president of Enjay, will be president of Enjay Chemical Company. R. K. Dix, A. D. Green, and K. J. Nelson have been appointed vice-presidents; A. F. Imlay, treasurer; T. C. Lewis, assistant treasurer; and F. P. Hagman is the division's controller.

Above left, one of the two buildings purchased by Kolar Laboratories in 1957. Its 137,000 sq. ft. of floor space is entirely for manufacture of private brand cosmetics and toiletries. At the right, left to right, Lester Bartolai, purchasing agent with Kolar for 38 years; Chester E. O'Sheil, vice-president and general manager, with Kolar since 1940; Edwin Michalik, assistant treasurer, with the firm since 1949; and Charles Chanian, traffic manager, with Kolar since 1946.

Kolar's Golden Anniversary

Celebrating its fiftieth anniversary this year, Kolar Laboratories, Inc., Chicago cosmetic private brand development and packaging company, looks back over the years. Gustav S. Kolar, chairman of the board of the company recalls its founding in 1910 when he turned his back on the securtiy of becoming a chief chemist of the city of Chicago upon his graduation, to apply his knowledge to the then embryonic cosmetic industry. First joining forces with Mme. Qui Vive, a non-de-plume for Mrs. Helen Jameson, King Syndicate beauty editor, and acting as her chief chemist in development of the Qui Vive line, many practical innovations were immediately introduced.

Following the official founding of Kolmar in 1910, the new company created new products demanded by an awakening public. Many "firsts" were recorded. Top items included tinting nail polish, waterproof cream rouge, marcelle wax, home permanent cold wave kits, and innovations in liquid creams, pressed compact rouge and molded lipsticks.

In the struggling early days when sales came hard and cash was short, Mr. Kolar augmented his income as technical editor of the leading beauty shop magazine, and lectured at many beauty schools. Personal contacts and word-of-mouth advertising constituted the sole sales effort.

During the years, Gustav Kolar was joined by his brother, Hugo R. Kolar, a chemist, and his son George G., a graduate in chemistry from the University of Chicago. Hugo, later to become a partner, is a member of the nucleus of the company's product development group. The second generation, George G. Kolar became president of the company in 1946.

Expansion of the business necessitated several moves into larger quarters, and brought into the firm Hy Wasserman and Glen Pray in sales, Peter Parker as chief chemist, and Chester E. O'Sheil, then production manager, now vice-president and general manager.

In 1957, the company ventured into the roll-on applicator business, and this remains a large portion of the company's deodorant-antiperspirant business.

With continuous development of new products and an over-expanding group of clients who advertise nationally, Kolar purchased buildings of 138,000 square feet at 1123 West Jackson Boulevard in late 1957. These enlarged quarters have permitted diversification into other manufacturing and packaging fields. The company packs more than 500 products under private label.

Laboratory research of new products and convenience packaging is nearing completion in many phases of the makeup field. Kolar executives forsee new revolutionary changes in this segement of the cosmetic industry. The founder of Kolar feels the tendency today is toward incorporation of therapeutic properties in cosmetic items and that a more scientific approach is being taken in developing products for hair and skin care.

From left to right, George G. Kolar, president, and son of the founder of Kolar Laboratories; Hy Wasserman, who joined Kolar 46 years ago, devoting his time entirely to sales; Gustav S. Kolar, founder and chairman of the board; and his brother, H. R. Kolar, chemist with the firm since 1912. Kolar, celebrating its 50th anniversary, now packs more than 500 private label items.

Hocking's Pittsburgh Division Moves to Larger Quarters

Anchor Hocking Glass Corporation has moved its Pittsburgh Package Division to new and larger quarters at Two Parkway Center, 875 Greentree Road, Pitsburgh 20, Penna.; telephone, WAlnut 2-4144.

A display of representative lines of Anchorglass containers and Anchor metal and molded containers will be maintained for customers at the new office.

Malmstrom Chemical Wins Safety Citation

The Malmstrom Chemical Corporation, producer of lanolin specialties, has been awarded a Citation of Merit in the 32nd New Jersey State Annual Safety Contest, "for working throughout the year 1959 without suffering a disabling injury."

The award was presented on April 11th at a dinner co-sponsored by the N. J. State Department of Labor and the State Industrial Safety Committee.

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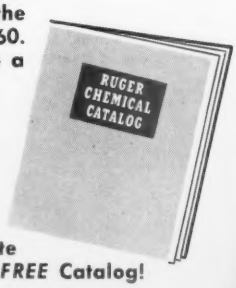

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Fernand de Montmollin Retires

Dr. Fernand de Montmollin, group leader in charge of the vitamin B_1 manufacturing department of Hoffmann-La Roche, Inc., has retired after more than 24 years with the company.

Born in France and educated in Switzerland, Dr. de Montmollin came to this country, where he first joined Monsanto Chemical Works as a plant chemist, later working with the Hercules Powder Company in research under his former professor, Dr. J. F. Picard, with whom he had studied at the University of Lausanne, who was a consultant for the company. He then undertook an assignment for the Givaudan Corporation, before joining Hoffmann-LaRoche. Most of Dr. de Montmollin's 24 years with the firm have been spent in the manufacture of vitamin B_1.

He and his wife are returning to Switzerland in May, after his retirement.

R. Doelling Joins Fritzsche 25-Year Club

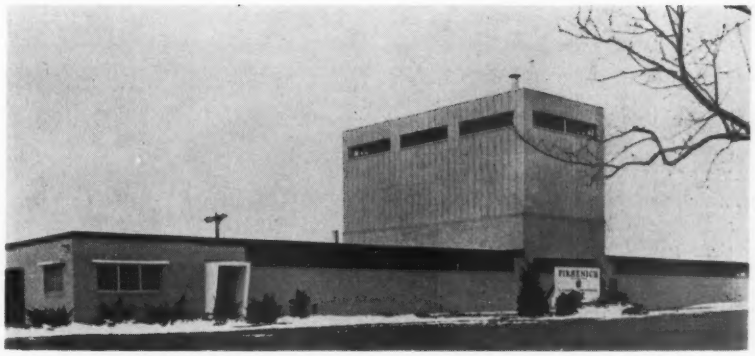
Rudolph Doelling of the Fritzsche Brothers' Clifton plant recently joined the Quarter of a Century Club at a luncheon in his honor. He was given a Government Bond by the officers and directors of the company, and a gift from his fellow employees.

Mr. Doelling is an expert in the production of fruit concentrates and bases.

Fragrance Process and Kreidl Kg. Reach Agreement

Jack Barry, executive vice-president of the Fragrance Process Company, has announced that an agreement has been reached with Kreidl Kg. and its director, Dr. Werner Kreidl of Vienna, Austria, and the Fragrance Process Company for exclusive representation of their process of impregnating polyethylene film and plastics of all types with aromas of a wide variety, in the European market. Kreidl Kg., European chemical firm, will represent Fragrance Process in sales throughout western Europe.

Dr. Kreidl has arranged for a special display of sample scented polyethylene film and bags at the Dusseldorf packaging convention this Spring.



Plainsboro Laboratories Division of Firmenich, Incorporated, in N. J., recently doubled in size.

A. B. Richardson Retires

Arthur B. Richardson, chairman of the board of Chesebrough-Pond's Inc., has retired as an officer, but will continue as a director of the company.

Mr. Richardson has been with the company for 46 years. Beginning in the overseas operations, he went to Russia as manager in 1915. After the Revolution in 1918, he went to China, where he developed the firm's business until 1920, when he was sent to England as branch manager. He became assistant vice-president in 1930 and a director in 1933. In 1955 he was elected chairman of the board, and when Chesebrough merged with Pond's he became chairman of the board of the merged company.

Foragers Outing

The Foragers of America will hold its annual outing on Saturday, June 4, at Reinhard's Outing Resort, Bayville, Long Island. A shore dinner, baseball game, and other events are scheduled.

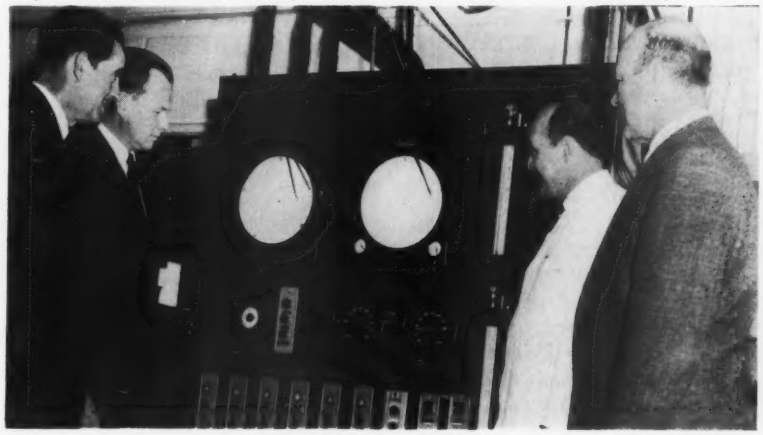
Firmenich Inaugurates Larger Quarters at Plainsboro Site

Robert Firmenich, commercial director and partner of Firmenich et Cie. of Geneva, Switzerland, and Charles Bryan, president of Firmenich Incorporated, New York, were recently congratulated by Henry W. Jeffers, Jr., Mayor of Plainsboro, New Jersey, on the more than one hundred per cent expansion of the Plainsboro Laboratories Division of Firmenich Incorporated.

Plainsboro Laboratories was established in 1955 for the creation and evaluation of new forms of flavoring materials, which are now almost entirely in powdered form. They are based on a development of encapsulating liquid flavors, and are used by the pharmaceutical industry in flavoring drugs. Flavors are first compounded and then converted to the powdered form.

Mr. Firmenich, who visited the Plainsboro plant on his trip around the world, also visited the recently acquired 113-acre plant at Kimberton, Pennsylvania.

Electronic Control panels of experimental dryers at Plainsboro Laboratories Division of Firmenich, Incorporated; left to right, Charles C. Bryan, president, the American company; Robert Firmenich, partner, Firmenich et Cie, Geneva; Clifford Rubicam, plant manager; and Henry W. Jeffers, Jr., Mayor of Plainsboro, New Jersey, site of the Laboratories Division, recently enlarged.



Officers for 1960 of the New England Chapter of the Society of Cosmetic Chemists; from left to right: Richard Faust, Cuticura, chairman-elect; Myron Slotsky, Gillette, secretary; Jesse Starkman, Gillette, chairman; Donald Kirby, Breck, treasurer; standing, R. Reavey, Breck, legislative committee; Dr. E. Levy, Gillette, interprofessional; H. Harris, S. B. Penick, membership; J. Akerson, Gillette, house; J. Dugan, Dodge & Olcott, special events; R. Swaine, A. D. Dittle, publicity. The group's Charter was granted in March to the 48 practicing chemists, who met in Boston.

Aerosol Seminar Planned By the Packaging Institute

An 18-man panel of specialists will answer questions on the technology of aerosol packaging at a special seminar for Professional members of the Packaging Institute, which will be held June 1 at the Statler-Hilton Hotel in New York City. This is the second seminar in a series dealing with specific packaging subjects.

Attendance is open to all Professional members of the Institute, and to those who have submitted applications for this type of membership. Such forms may be obtained from Edward G. Penn of the Riegal Paper Company, general chairman of the seminar program, at the Packaging Institute, 342 Madison Ave., New York City 17. The day's registration fee is $25.00.

Panel moderator will be Fred T. Pickerell of the Schering Corporation, and questions to be discussed should be sent to him immediately, at the Institute.

Members of the panel are Jean W. Baer, Sprapak; Charles E. Beach, Stalfort; John Beacher, Avon; Walter C. Beard, Risdon; L. G. Cannella, Continental Can; Victor Di Giacomo, Givaudan-Delawanna; J. J. Gregory, Newman-Green; A. R. Marks, Wheaton; and Russell McGhie, Colgate-Palmolive. Also Dr. Francis A. Mina, Reed & Carnrick; Ralph Minerrino, Metal Fabricating; John J. Palmer, Peerless Tube; H. E. Peterson, Peterson Filling; Joseph C. Pizzurra, Precision Valve; M. W. Robertson, Owens-Illinois; H. R. Shepherd, Aerosol Techniques; Ralph Thomas, Bristol-Myers; Sigmund Was, Emson Research.

Lilly Dedicates Australian Subsidiary

Burton E. Beck, president of Eli Lilly International Corporation, dedicated Lilly's new Australian export subsidiary on May 2. The 30,000-square foot plant, which is built on a six-acre site near Sydney, will concentrate on production of tablets and filled capsules.

Mr. Beck said at the ceremony that the International Corporation, a subsidiary of Eli Lilly and Company, plans first to answer the needs in Australia, and then to supply other markets in the south-west Pacific.

Among the guests at the dedication was John McEwen, Acting Prime Minister of Australia and Minister of Trade, who represented Prime Minister Robert Menzies.

The Sydney plant is the first manufacturing facility which Lilly has built outside North and South America and the United Kingdom. Others are being planned in various parts of the world.

Realistic Gets Rights to Sea Breeze in Canada

The Realistic Company of Canada and Sea Breeze Laboratories, Inc., of Pittsburgh, Penna., have announced the signing of an agreement giving Realistic of Canada exclusive manufacturing and distribution rights for Sea Breeze Antiseptic Aid, throughout the Dominion. Production has already begun at Realistic's plant in Oakville, Ontario.

Sea Breeze Antiseptic Aid is a product for use on skin and scalp during permanent waving, hair color treatment, manicuring, and other beauty shop services.

Schimmel Moves to New Plant

Schimmel & Company, Inc., has moved its office and plant to Newburgh, New York, where the company's new building has been completed. Formerly in New York City, where the firm was established in 1934 as a subsidiary of the German essential oil company of Leipzig, the expanded facilities of the present American firm will make possible additional manufacturing, compounding, and development work, as well as provide convenient access to the greater New York area.

Gert Keller established the American company. He, together with B. G. Wirsing, is the present owner.

Merle F. Koblish

Merle F. Koblish, sales manager at Allied Chemical's General Chemical Division, died May 1 at his home in Morristown, N. J. Mr. Koblish, who was 54 years old, was recuperating from virus pneumonia when he suffered a heart attack.

With the division 31 years, Mr. Koblish was responsible for sales of basic industrial chemicals. He had been an assistant sales manager, and manager of the St. Louis and Washington, D. C., offices.

Paul Langlais

Paul Langlais, for the past 22 years technical director of Charabot & Cie. in Grasse, France, died March 30 in Grasse. Dr. Langlais was also in charge of the research laboratories for the French aromatic raw materials company.

He was Chevalier of the Legion of Honor and Laureate of the French Academy of Science. He had written numerous articles and papers concerning the perfume industry.

H. U. Sartorius

Herman U. Sartorius, a former member of the United States diplomatic service, died May 11 at St. Luke's Hospital in New York City after a short illness. He was 70 years old.

Mr. Sartorius was at one time treasurer of Reed & Carnrick of Jersey City, N. J.

Kolmar Expanding

W. J. Wick, president, Kolmar Laboratories, who has just returned from abroad, reports that Kolmar Cosmetics (England) Ltd. is planning a new plant to double its capacity.

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BEAUTY FASHION THE MAGAZINE OF PERSONAL SELLING

101 West 31st Street, New York 1, N.Y.

Management Forum

BY FRANCIS CHILSON
INDUSTRIAL CONSULTANT

White Collar Crooks

According to a recent estimate, robbers, hijackers, automobile thieves, pickpockets, and other sorts of professional crooks will get away with about 500 million dollars in 1960. These professional crooks are but pikers compared with the white collar boys who, according to Norman Jaspan, author of *Thief in the White Collar*, will steal from their firms more than a billion dollars this year. This shocking state of affairs in industry is not known generally because most companies will not prosecute offenders because of their family or social connections or because management feels that the publicity involved in prosecution casts an unfavorable shadow upon the company or on the management itself.

In my own consulting practice I have heard of many instances of white collar crime. For instance I know of three export managers who were caught plundering their companies but only one was sent to jail. One got away with his loot because he had married the president's niece and the president didn't want any unsavory publicity in connection with his family. The money stolen of course belonged to all the stockholders of the company and not merely to the president. But the president didn't think of that, nor did he offer to make good the company's loss as the price of avoiding nasty publicity. I know of another case where a company official was caught padding the payroll. He got away with it because the president of the company knew his family and realized that to punish the thief would also punish more severely the man's wife and children.

I know that some engineers and builders make a practice of presenting to certain company officials rather expensive gifts such as new houses, patios, and fireplaces whenever they get contracts to build new factories or laboratories. Advertising agencies make a practice of lavish giving to those officials of their client's organizations who are in a position to favor them—such expensive gifts as automobiles, yachts, foreign tours, sterling silver flatware, watches, and works of art of various kinds.

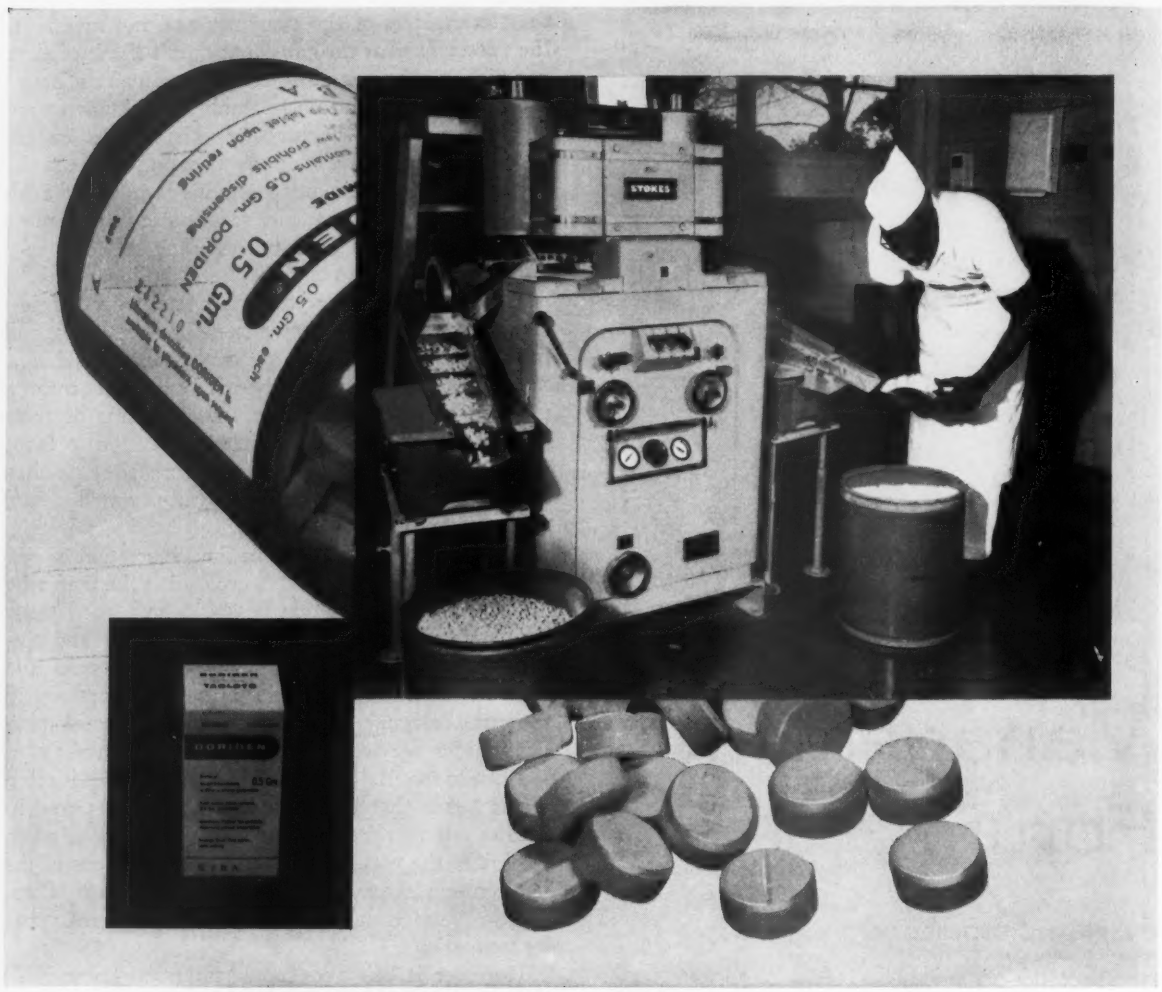
Anyone who gives a gift in the expectation of getting an undue favor is just as crooked as the man who accepts it. In my opinion it would be a good thing for everybody if the cost of gifts to clients and customers were ruled out as deductible expenses and the practice made illegal. I place stock options in the same category as gifts made without moral justification for services very often not rendered.

I like to maintain an optimistic outlook but it often seems to me that in business, in the unions, and in politics our moral fibre is softening. But then, when I think of the peculations of the robber barons of the last century like those of Jay Gould, Jim Fiske, Commodore Vanderbilt, and others I feel a little reassured by comparison.

However it behooves management to know itself and to be eternally vigilant to discover which of its members is likely to be weak when his big temptation comes. When one of its members succumbs to temptation and sticks his paw in the till, management is responsible for not maintaining a fool-proof system of checks and balances and for not maintaining a state of eternal alertness to signs of unusual affluence among its members. I know a purchasing agent once who never bought anything of importance for his firm unless he got a rake-off. That he was getting fat kickbacks was immediately obvious to me the first time I visited his home. No man could have maintained that degree of splendor even with three times the salary the man was getting. But his management never noticed anything incongruous about this man's mode of living and his annual income. And several years were to elapse before, by accident, the management discovered what was going on in the purchasing department.

Some managements condone bribery. They will permit petty bribery to take place on their own premises such as greasing the palm of the local fire inspector. They will pay bribes to get government

At CIBA Pharmaceutical Products, Inc., a Stokes Model 540 produces Doriden*... a non-barbiturate hypnotic and sedative.



CIBA GAINS EXTRA SAVINGS WITH STOKES HIGH SPEED MACHINE

It was expected that the Stokes Model 540, high speed rotary machine would have a greater TPM capacity than the two older machines it replaced . . . effectively reducing production time (cost). Something CIBA wasn't expecting is the additional savings realized through the advanced design features of the equipment. Here's why:

- compact design, with the drive in the base, requires up to 50% less floor space than other machines.
- controls and easy-to-read indicators are grouped together, at the front of the machine . . . simplifying operation.
- hydraulic overload protection and automatic self-lubrication minimize maintenance and provide years of trouble-free operation.

CIBA, a 20-year user of Stokes pharmaceutical production equipment, likes the smooth performance which reduces operator fatigue and assures peak efficiency. The only operator attention required is an occasional checking on feed hopper level and a periodic check on tablet weight and hardness. Daily clean-up takes a minimum of time.

You can realize important economies with Stokes equipment. Stokes makes a point of learning the needs of pharmaceutical manufacturers . . . builds equipment to satisfy their requirements. Why not contact the Stokes representative in your area for additional information.

Pharmaceutical Equipment Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES

*Registered T.M.

contracts. They will pay bribes to crooked union stewards to keep their labor forces quiet. When such practices prevail, Mr. Big cannot expect the individuals who comprise his team to have a high moral calibre.

We Are Going On

In some foreign eyes we are soulless materialists, interested in nothing but money, gadgetry, and vulgar display. Many Americans say the same thing. As a matter of fact self-criticism is an American trait, as Hillaire Belloc pointed out in *The Contrast* forty years ago. We are always criticizing everything we think is wrong no matter where it is or what it is. But the hell of it is that we always do our criticizing in loud voices and often in the wrong places. Still, America is not so bad. More recordings of classical music are sold here than in all the world together. We have more symphony orchestras than all the world. Our kids are better educated than average and go to school longer. A greater percentage of our population graduates from universities than in any nation in the world. Our foreign free medical services can be matched by no nation in the world. In charity we have no peer for, as Churchill said, never in the history of the world has any nation given so much to so many. I have noticed wherever I have traveled in the world—and I have traveled far—that money appeals to all people; they grab for all they can get and they greedily hang on to it. But we blow it in, often unwisely. I've noticed also that all this decrying of American gadgetry is all hogwash. The moment a foreigner of whatever stamp or color gets hold of enough dough he buys American gadgets or the equivalent. And when he plays dance music it almost always is American jazz. Why foreigners like jazz is beyond my comprehension.

Odds and Ends

Powell Pressed Steel Co., Hubbard, Ohio, makes Invert-a-bin which is a large metal bin intended for the transportation and dumping of powdered materials. These bins are equipped with conical tops and dust proof discharge gates and are designed so that they can be inverted by means of a standard inverter on a fork lift truck. . . . Lewis Shepard Inc., Watertown, Mass., have a high lift walkie fork truck with extensible forks. The design permits operation in very narrow aisles. . . . Towmotor, Cleveland 10, Ohio, makes a similar compact unit designed with a front-end pivot which permits pivoting the load 90° either left or right. . . . Pad-Pac is a vacuum device made by Vac-U-Lift Company, Salem, Ill., which permits picking up such things as drums by vacuum. The device can be attached to a monorail trolley and probably to a fork lift truck although the literature doesn't indicate that . . . Torit Mfg. Co., St. Paul, Minn., have introduced a new unit dust collector costing less than $150 each. Capacity 200 cfm at 4100 fpm . . . Rietz Mfg. Co., West Chester, Pa., has introduced an angle type disintegrator that can be used for mixing, grinding or dry granulating . . . A new pump has been introduced by Goodyear Pumps, Inc., 9 Rockefeller Plaza, New York City 20. This pump is designed on the archimedian helix principle and imparts a nonpulsing, squeegee action to the materials being handled. It will handle shampoo liquid without foaming and it will pump suspensions of crystals without damaging the crystals. . . . Continuous tilting tray dryers are made by Wyssmont Company Inc., Long Island City, N. Y. These dryers are fast, compact, economical.

Management Research

The drug industry is pouring millions of dollars into product research but not a damn dime into management research. Of the two the latter is the more important. I know you will point to the work of the American Management Association and to all the courses and seminars that are being conducted all across the land. But all these efforts are being devoted to management techniques—applied management. We make the same error in calling the scientific work upon which we are spending so much money "research." Actually most of it is applied technology or product development. The amount of fundamental research being done in industrial laboratories is relatively small. There is no doubt in my mind that if our industry had had better management during the past twenty years, research and development results would have been far more effective and less costly. This is not a criticism aimed at the drug industry only. It applies all across the board. The gigantic food industry, as was pointed out in a recent financial publication, has done no research in nutrition and little of any other kind. But the fundamental element in all programs of research and development is management. Without effective management research and development cannot be supported, cannot be guided, and cannot profitably be exploited. The business must underwrite the costs of research and development, and, if it is to continue to be profitable in an increasingly competitive economy, it must have increasingly better management.

Now what is management? To many people it is the routine administration of business affairs to achieve profitable results for an enterprise. This definition was all right 25 years ago, but there is more to management now than the direction of routine affairs. The priceless ingredient in management is *inspiring leadership.* This is the ability to arouse faith, confidence, and loyalty in other people and to inspire them to think and act for the common cause. Military history is replete with the names of men who had it: Patton, Lee, Sheridan, Sherman, Napoleon. Industrial history contains a long roster of illustrious names—men like Ford I, Ford II, Cordiner, Armour, had or have the capacity for inspiring

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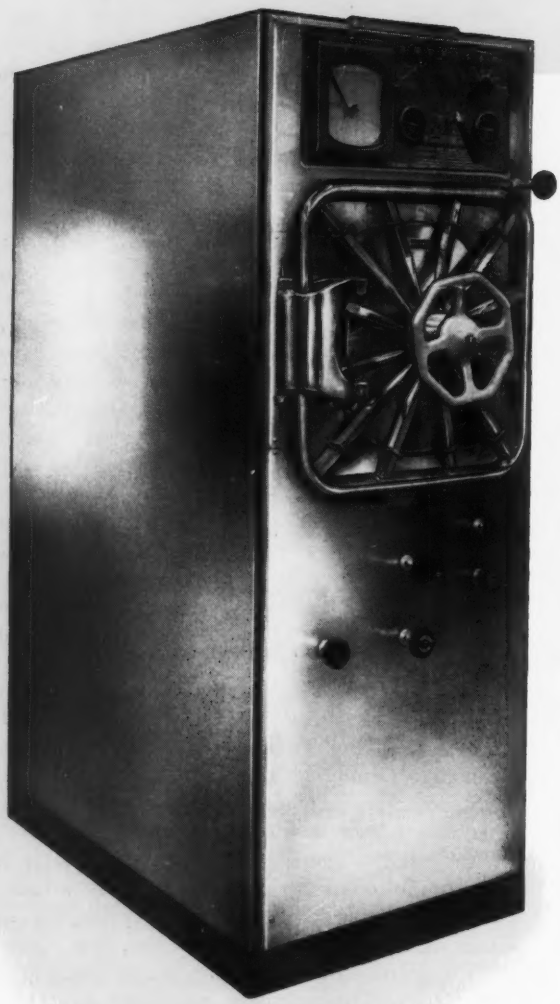

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leadership. Men of this calibre can size up a company or a situation that has gone sour and immediately apply corrective measures, at the same time inspiring all the people connected with the enterprise, whose morale has been destroyed, with confidence that their leader knows exactly what he is about.

Management techniques can be taught to intelligent people and this is being done all the time. The question is whether intelligent people trained in the techniques of management can be developed into inspiring, imaginative leaders. I think they can be developed to a great extent, but I also think leadership ability in this sense is born in a man. It seems to me that our problem is to find a means other than silly psychological tests to find such men.

Management responsibilities are broadening all the time. Management must take a hand in politics; in education; in public affairs; in labor affairs. Management must become more concerned with the future; it must learn how to devise and use projection charts as a guide for decisions made today that will affect tomorrow. In my view our over-adoption of management techniques emphasizing team work and togetherness has had the effect of stultifying leadership talent. Nobody wants individual responsibility anymore; nobody wants to get out on the end of a limb. I don't wish to give the impression that technicians in management are not needed. Of course they are. The technicians are the squad and the group leaders—the foremen and the superintendents. There will always be a clear division between top, bottom, and middle management. But it is the top that causes chief concern. If top management is effective, lower eschelons will be too.

Pollution

I was talking with an old Hudson River shad fisherman the other day and he told me that in the days when the Hudson wasn't so heavily polluted, he and his mates would get three or four hundred shad with a single sweep of the net. Now he says they are lucky to get 100. His reason: stream pollution, especially with chemicals. A similar story can be told of all the once pure rivers in the country, and apparently no one gives a damn. It does not cost much to treat industrial wastes and all industrial wastes can be treated to render them harmless but such is the morality and mentality of many big companies that instead of making the public gesture of treating their wastes, they wait until forced by law to install treating plant. It's a pity.

Tyll Eulenspiegel

At the recent PMA dinner I had the honor of having dinner with Fritz Degener and his lovely wife Gertie. (Much too good for him!) Fritz and I were talking—that is to say Fritz was talking and I was listening (I couldn't help myself!)—about the time my ancestors shot all his Hessian ancestors at the Battle of Trenton. According to family records it wasn't much of a job to shoot all those Hessians because they were already half shot when George Washington and his men upset the Christmas party. According to family records, when George Washington's men rudely broke down the doors of that comfortable Trenton tavern, Oberlieutenant Herr Degener was singing a nostalgic old German song:

"Eireland must ben heaven 'cause meinen mutter ben comen from dere." To this day Fritz Degener can never mention Ireland without a tear in his eye. The sentimental attachment for the Ould Sod runs in his blood, though I can't understand how he can have any blood at all—if my ancestors really shot all his ancestors on that cold Christmas night so long ago.

When Heyden Chemical Co. made Fritz vice-president in charge of sales (I think that's the title they gave him—big companies always give you a title instead of a raise), they transferred him to headquarters in New York where Fritz now reads reports from his salesmen. He loves them—the reports I mean. Ever since Fritz left Chicago he has bemoaned the fact that he can no longer be flag bearer in the Home Guard. I asked Mike Charley if he'd ever seen Fritz carrying the flag in the Home Guard. Mike said the only times he ever saw Fritz carrying the flag, it was in MacNamara's Band.

Note: Fritz is a Tyll Eulenspiegel. This is the German offspring of an Irish Leprechaun and an English Gremlin. Mostly Leprechaun, because Fritz has a touch of Blarney.

Worthwhile Quotes

Thoreau: "The surface of the earth is soft and impressible by the feet of men; and so with the paths the mind travels. How worn and dusty, then, must be the highways of the world—how deep the ruts of tradition and conformity!"

George Sarton: "They (saints and scientists) have much in common, above all, their other worldliness. There are but few saints among scientists, as among other men, but truth itself is a goal comparable to sanctity."

Pharmaceutical Promotion

This is the title of a data resources inventory prepared by Harry J. Knox of Darien, Conn. In reality it is a questionnaire to help you evaluate marketing information in the following fields: general information—journal and mail; detailing—general, detailing—coverage, detailing—performance; promotional results.

Gas Fork Truck

A 2500 capacity gas powered fork truck was recently added to the well-known Clark Forklift line of industrial material handling trucks. This is made by the Industrial Truck Division of Clark Equipment Company. Consult your local agent. Clark has agencies practically everywhere.

The Sense of Smell

This interesting book was written by Roy Bedichek. It covers everything from stink to sniff. I don't know the publisher but it can be bought through Book-of-the-Month-Club, 345 Hudson St., New York City.

On Being Second-Rate

I don't understand the hysteria prevailing in Washington among military brass and administration officials because we are supposed to be second-rate to Russia in "missleurgy." So what? (Perhaps the word I've just coined should be spelled: "missleorgy" because that's what it is.) There's nothing wrong about being second-rate in the missle field. We always were and will always be second-rate in something to somebody. No nation was ever or ever will be first-rate in everything. Nature doesn't bestow genius upon one nation only. Time was when we were decidedly second-rate to the Germans in chemistry and medicine but nobody in this country got his bowels in an uproar about it; nobody felt the country was doomed because of that. In fundamental research we always were and probably still are second-rate to the English but nobody's lost any sleep over that. So what are those brass-bound magpies in the Pentagon chattering about? It is my opinion that the hysteria in Washington is a reaction to Russian propaganda rather than to Russian fact. And that's exactly what the Russians want. We are way ahead of Russia in providing for our people a self-respecting way of life, free from fear and oppression; we are ahead of Russia in minimizing poverty, hunger, disease and dirt; in providing comfortable housing, comfortable clothing. Why worry if in some scientific pursuits Russia gets ahead of us? I think it is madness to assume Russia will ever risk destroying herself in order to destroy us with any sort of missle. She is trying to destroy us with words and if we are not careful words may prove to be the most effective weapons.

Battery-Powered Fork Truck

A 4000-pound capacity, electric fork truck has been added to the Clarklift line of trucks produced by the Industrial Division of Clark Equipment Company, Battle Creek, Mich. The EC-40, it is cushion-tired, and is equipped with carbon pile drive control. High torque, required for fast acceleration, is provided by dual field series windings in the motor drive.

It can climb a 10 per cent grade fully loaded, and up to 6.2 mph. Lifting speed is 36 fpm, lowering speed is 70 fpm, outside turning radius, 70 inches.

Integrated Plastic Bag Production Equipment

An integrated system of production equipment which starts with the resin granules and delivers

LOOK TO US FOR EVERY LIQUID FILLING NEED

Most Versatile Multiple Filler

MODEL B-49 STRAIGHTLINE VACUUM FILLER. For liquids and semi-liquids. Fills 4 to 9 containers simultaneously; up to 50 small containers p.m. Lever engages and disengages filling stems, otherwise operation is automatic. Adjustable for all container heights up to 14"; miniature and standard bottle finishes, gallon F-style cans, wide mouth jars. Stainless steel is standard; plastic for filling special solutions on order. Discharge conveyor optional. For details, request "Bulletin B-49."

MODEL B-2 VACUUM FILLER. Fills 2 containers while filled containers are being removed and empties loaded. Thus, operation is continuous. Handles containers up to 4⅛" dia., 13" hi. Interchangeable stainless steel filling stems; plastic available on special order. Portable. Has cord and plug. Write for "Bulletin B-2."

U. S. SIPHON FILLER. For all liquids, foamy products and products that do not permit agitation. Stainless steel tubes. Glass-lined tank. For all containers. Write for the "Siphon Bulletin."

U. S. HAND FILLER. A precision unit of high quality for maximum efficiency. Write for "Hand Filler Bulletin."

U. S. BOTTLERS MACHINERY COMPANY
PACKAGING ENGINEERS
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finished printed bags at the other end of a straight-line, continuous-flow operation, has been introduced by F. J. Stokes Corporation, 5500 Tabor Road, Philadelphia 20, Penna.

The new equipment can make plastic bags up to 21 inches wide and 24 inches long, from plastic film up to four mils thick, printed in one to four colors, with or without vent holes as desired, at production rates as high as 120 bags per minute. The cost is exceptionally low, and the maker or user has complete control over inventories and production schedules. With the "Bag-Line" plant, only one basic raw material, resin, need be stocked.

The Bag-Line plant is supplied as a complete system; no additional equipment is needed. Stokes supervises the erection and start-up, trains the operators, provides technical service to the user, and works with him in whatever ways are necessary.

Air-Chain Conveyors

Alvey Conveyor Manufacturing Company, 9301 Olive Street Road, St. Louis 32, Mo., has introduced the Air-Chain conveyor, which makes it possible to unload complete truckloads of empty cans or cartons of bottles in between one and one and one-half minutes.

A trailer is equipped with two Air-Chain conveyors, each handling double-stacked pallet loads of cans. A drag chain between the two rows provides movement to the pallet loads. Mounted in a track bolted to the trailer, it rides on a flexible spring steel wearing strip which rests on an inflatable rubber hose. The hose is inflated to bring the chain to the level of the rollers in the roller conveyor, bringing the chain to press against the bottom of the pallet, which provides the movement.

Filling Machines for Small Components

A line of automatic, high-speed filling machines for injecting viscous compounds into small components has been developed by the Swanson-Erie Corporation, Erie, Penna.

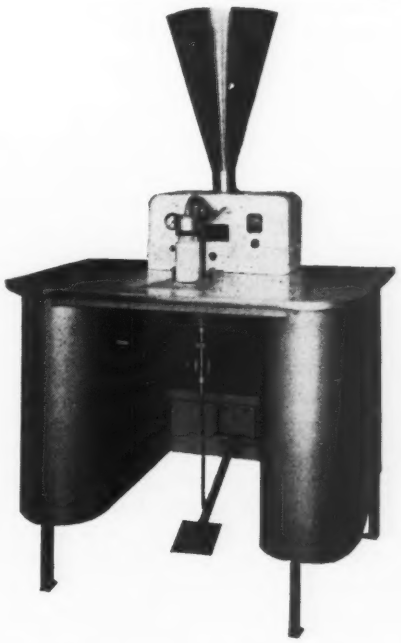
The machines will fill circular apertures of diameters up to two inches, which lend themselves to automatic hopper feeding. All models have variable volume-controlled filling cycles compatible with the material to be dispensed. Parts to be filled are automatically fed from bulk hoppers at production rates of between 3000 and 18,000 units per hour.

Automatic Dumper Line

Conveyors and Dumpers, Inc., Division of Mercury Industries, Hillsdale, N. J., has designed the Cesco Steel Drum Dumper, which operates from lifting heights between 12 inches and 50 feet, keeps manual labor at a minimum. Capacities are from 100# to 5,000#, depending on the unit selected. The Cesco Dumper handles a wide variety of products, excepting liquids, because of splash-back.

PNEUMATIC VACUFLOW, Jr.

SEMI AUTOMATIC DUSTLESS POWDER FILLING



Great flexibility. Immediate adjustment to different densities. Switches from non-pulsating to tamping action, at will.

THE VACUFLOW JUNIOR is ideally suited for handling products such as soluble coffee, powdered milk, baby powder, chemicals, insecticides and many other free flowing as well as non-free flowing powders. Its low initial cost and durable, versatile performance means "lower cost per container" — truly typical of Pneumatic bottling and packaging equipment.

PNEUMATIC

PNEUMATIC SCALE CORPORATION, LTD. 70 Newport Avenue, Quincy 71, Mass. Sales Offices: *New York; Chicago; Dallas; Rochester.* Agents: *Fred Todt Company, Los Angeles, San Francisco and Seattle. Rockwell Pneumatic Scale Ltd., London N.W. 2, England; O.R.M.A. Paris, France.* Subsidiaries: *Delamere & Williams Co., Ltd., Toronto; Carbert Manufacturing Co., Inc., Cambridge, Mass.*

(*Continued from page 620*)

rection of faulty fatty acid or lipid metabolism; and also relate a marked reduction in the oiliness of the skin after the supplementation of vitamin B_6 in a series of clinical trials in the treatment of acne. Schreiner et al.[10] experimentally induced pyridoxine deficiency with subsequent seborrheic dermatitis, which responded to B_6 therapy. Of salient interest, I myself have noticed that clinical or spontaneous (not experimental), cases of seborrhea sicca (dandruff), failed to show any significant improvement when treated with pyridoxine. It is my opinion that this failure is due to the fact that clinical deficiencies are invariably multiple, whereas a desoxypyridoxine-induced pyridoxine deficiency might very well be a sharply defined singular vitaminosis, providing the subject was normal before the experiment. Obviously, a plural deficit such as existed in the above clinical seborrhea sicca, cannot be cured by the supplementation of merely one factor, as would be possible and actually took place in the artificially produced deprivation of pyriodoxine.

Jolliffe[9] reported that of 37 patients with persistent post-adolescent acne, 28 were improved by pyridoxine taken orally. In many cases a marked reduction in skin oiliness was apparent, independent of the effect on acne. Wright et al.[11] conducted a two-year study of patients with seborrheic, seborrhoid, and eczematous eruptions of unknown cause; parenteral pyridoxine produced favorable results in the seborrheic outbreaks—improvement was evident in many cases and, in some, the lesions disappeared completely. Schreiner et al.[12] summarized their investigations thus: seborrhea sicca can be evoked by the pyridoxine antagonist, desoxypyridoxine; these lesions will clear when the diet contains sufficient pyridoxine; topical application of B_6 will also clear the dermatitis; spontaneous (not induced), seborrheic dermatitis of the sicca type did not respond to large doses of B_6 orally or parenterally, whereas local application with this vitamin did elicit healing. We have here another case of a spontaneous or clinical lesion which reflects multiple etiology and therefore could not possibly be cured by mono-vitamin therapy. Why the local application was successful must remain unanswered.

The foregoing comments regarding pyridoxine, although small in relation to the vast accumulated information, should be sufficient to indicate that pyridoxine deprivation, through the medium of interference with sebaceous function, can and does exert a formidable influence in the deterioration of skin integrity, and that any nutritional therapy for skin problems must reckon with this biochemical.

Biotin

Biotin is a member of the water-soluble group of vitamins loosely referred to as B complex. This component is synthesized in the human intestines by certain resident flora, which render an exogenous supply unnecessary. A naturally occurring deficiency is a remote possibility. Sydenstricker et al.[13] did achieve a biotin depletion by a diet high in egg white, which binds biotin and prevents absorption from the gastro-intestinal tract. A fine branny type of scaling appeared on the arms, legs, and face. Mention is made of biotin only because the deficiency signs are similar or related to those characteristic of several other members of the water-soluble vitamins, and also because these signs seem to imply some sort of dislocation in sebaceous gland function.

Ascorbic Acid—Vitamin C

Full-blown scurvy is rarely if ever seen in the United States, but chronic, sub-clinical ascorbic acid deficiencies are extremely common. Their incidence appraised from the incidence of a physiological capillary fragility—50 per cent of all females more than 20 years old have past or present experience with this condition in the form of "black and blue" marks anywhere on the body, produced by impacts so mild that they were not noticed. Bleeding gums is a related manifestation differing only in locality; any dentist will attest that this is extremely prevalent among women. Vitamin C enters into many chemical reactions in the body, not all of which are fully understood. Some of the more important functions are the formation and maintenance of intercellular material such as the collagen of all fibrous tissue, the cement substance of endothelial tissue, and the matrix of bone, dentin, and cartilage. In capillary fragility, the vasculature has been weakened by insufficient intercellular cement, or ascorbic acid. Capillaries so affected, when subjected to even the slightest trauma which normally would be of no consequence, rupture, thereby permitting the extravasation of blood into the surrounding tissue. Of practical dermatological interest is the claim that a relationship between vitamins A and C exists.[14] Rats on a diet high in protein and deficient in vitamin A develop hemhorragic symptoms that are alleviated by ascorbic acid. Vitamin C can also moderate the effects of toxic doses of vitamin A in rats. It is also claimed that the plasma's ascorbic acid content is positively correlated to blood levels of vitamin A. Vilter[4] asserts that one of the first recognizable signs of scurvy (vitamin C deficiency), is follicular hyperkeratosis on the extremities—the hair in these affected follicles bends, breaks, or splits in such a manner that it becomes ingrown. Also petechiae (small spots formed by the effusion of blood), appear at each follicle thus altered. This behavior pattern strongly suggests that vitamin C deficiency can provoke disturbances in the skin identical with that produced by vitamin A inadequacies.

Another observer claims that one of the earliest symptoms of scurvy is dryness and roughness of the skin. Follicular hyperkeratosis, and dryness and roughness of the skin are established facets of vita-

(*Continued on page 680*)

The first meaningful color stability specifications for fatty acids

	Lovibond Color—5¼" Cell-Y/R Max.		
	Original Color Spec.	Color Stability Specification	Typical Color Stability
EMERSOL OLEIC ACIDS			
233 LL (low-linoleic)	3.0/0.5	10.0/3.0	7.0/2.5
221 Low Titer White Elaine	5.0/0.5	20.0/7.0	15.0/5.0
EMERSOL STEARIC ACIDS			
132 Lily (T.P.)	1.0/0.3	4.0/1.8	2.0/1.3
120 (D.P.)	1.5/0.5	7.0/2.0	4.5/1.5
140 Palmitic	1.0/0.3	6.0/2.0	3.0/1.5
150 High Stearic	1.0/0.3	6.0/2.0	3.0/1.5

These new Emery specifications are meaningful because they are based on the new A.O.C.S. standard test method, the first *reproducible* color stability test. Essentially, method L15a-58 subjects samples to 205°C under a blanket of nitrogen . . . stearic acids for 2 hours and oleic acids for 1 hour.

Thanks to this test, you can now compare color stabilities accurately and confirm positively the superior quality of Emersol Stearic and Oleic Acids.

Try them in your product and you will see the difference. For a comparison of these specifications in Lovibond, Photometric Index and Gardner color systems, write Dept. D-5 for a copy of Technical Bulletin No. 222.

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Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio—Vopcolene Division, Los Angeles
Emery Industries (Canada) Ltd., London, Ontario—Export Department, Cincinnati

Compounder's Corner

Glycerine in Toothpastes

The glycerin content of a toothpaste will perform several functions according to A. B. Cobb (*SP.C.* 33: 369, 1960) the most important of which are:

(*a*) Humectancy
(*b*) Flavor
(*c*) Binder/viscosity stabilization
(*d*) Preservation from deterioration due to bacterial contamination
(*e*) Prevention of interaction between ingredients due to hydrolysis.

When considering the glycerin level required to obtain a desired humectant effect in a toothpaste, we must remember that for practical purposes it is the glycerin/water ratio which is the determining factor and not the glycerin content of the toothpaste itself.

Generally speaking a glycerin/-water ratio of 40:60 or 50:50 is suitable for the U.K. although climates having a low humidity may require a glycerin/water ratio of as high as 60:40. These levels of glycerin would normally stop the formation of dried plugs in the tube nozzle even if the cap is not tightly closed.

There are, of course, successfully marketed toothpastes that contain no glycerin at all. The water content of these toothpastes must be exceptionally high to counteract the effect of water loss through faulty closures. The water level may be as high as 70 per cent on the toothpaste, with the balance being made up of about 25 per cent abrasive and 2-4 per cent of binding agent, together with the usual foaming agents and flavor ingredients.

All toothpaste formulators realize how important the flavor component is and in fact many believe it to be the most important single selling attribute of a toothpaste. The final flavor of a paste will be affected by all the major components but, by and large, glycerin wil play a greater part in modifying the flavor than any other ingredient. The main effect of glycerin is one of sweetness; similar levels of sweetness can be obtained by the use of saccharin, but this sweetness lacks "body," and it is found that a mass of material having a lower sweetness (e.g., glycerin) will have more "body" than a smaller amount of a substance having high sweetness (e.g., saccharin).

Glycerin as the sole sweetening agent would not give the level of sweetness desired in modern toothpaste formulations and small amounts of saccharin are also required. This "bodying" effect of glycerin is well illustrated in the case of glycerin-free toothpaste, which requires not only two or three times the saccharin level required for a glycerin-containing toothpaste, but also a somewhat higher flavor level.

Many of the slow reactions which occur in toothpaste during storage are facilitated by the presence of large quantities of water. As pointed out by several authors, an increase in the glycerin level considerably reduces the rate of reaction, since glycerin itself is unreactive under these conditions. Typical of these reactions are those where metal ions from the polishing agents, usually calcium ions, substitute into the binding agent or the foaming agent, giving rise to hardening, separation, lack of foam and other unwanted effects. Soluble salts are sometimes added to a toothpaste for specific effects; sodium chloride is added occasionally for its alleged cleaning effect upon dental plaque, while aluminum salts are used in increase the astringent effect of the toothpaste. The increased electrolyte content of these toothpastes can result in severe galvanic corrosion in aluminum tubes, and if the glycerin concentration in the aqueous phase is around 50 per cent, only lead or lacquered aluminum tubes can be used. If the glycerin content of the aqueous phase is around 80 per cent, the amount of electrolyte present is greatly reduced and such toothpastes can often be packaged in unlacquered aluminum tubes. Similar effects are found in toothpastes which contain appreciable amounts of chloroform, whose hydrolysis can lead to corrosion. This corrosion is greatly reduced by relatively high concentrations of glycerin.

The effect of glycerin concentration on flavor has already been mentioned, and the importance of glycerin in preserving the flavor of toothpastes during storage is currently the subject of a systematic investigation. The deterioration of many common flavors is more marked in toothpastes having the lower concentrations of glycerin.

The tendency to-day is away from the thick, semi-solid toothpastes which were in vogue pre-war, towards fluid dental creams. Soaps have been almost completely superseded by sodium lauryl sulphate and other synthetic foaming agents. Chalk is still the most common polishing agent in the U.K., although the tendency is for U.K. practice to follow the North American preference for dicalcium phosphate. Natural gums are giving place to processed binding agents, although gum tragacanth still has an important role in toothpaste formulation. The only humectant in common use in the U.K. is glycerin, although American formulations sometimes replace part of the glycerin by sorbitol syrup (70 per cent).

Sulfated Fatty Acid Monoglycerides

Sodium salts of fatty acid monoglyceride sulfates have been prepared by A. K. Biswas and B. K. Mukherj (*J. Am. Oil Chem Soc.* 37: 171, 1960) by sulfating purified monoglycerides with chlorosulfonic acid or a pyridine-sulfur trioxide complex and subsequent neutralizing.

Surface tension and interfacial tension of aqueous solutions of this series of surfactants have been found to decrease with the increase in concentration. At equal concentrations the myristic surfactant (among the saturated acids) has been found to possess the best tensioactive properties of all the samples tested. The oleic product is the best of the three C_{18} surfactants of varying unsaturation. The same trend is also noted regarding other properties, *viz.*,

foam characteristic, suspending and emulsifying capacity, and emulsion stability. Compared to the myristic surfactant, the oleic surfactant however gives a stabler emulsion at equal concentration.

The above trend is not strictly maintained with wetting characteristics. An increase in hydrophilic nature in the surfactant molecule appears to augment the property as evidenced in lauric and linoleic products. This may be attributed to the high rate of adsorption on and diffusion through the cotton ball. Calcium stability is also found to be better the more the surfactant is water-soluble, *e.g.*, linoleic, oleic, and lauric products.

It may be proposed as a general rule that an optimum balance between hydrophilic and hydrophobic groups in the surfactant molecule is contributory to the improvement in surface-active properties. The hydrophobic character of the fatty acids develops as their molecular weight increases while with the increase in unsaturation the molecule is rendered more hydrophilic.

The role of this optimum hydrophilic and hydrophobic balance on surface-active properties has been worked out by Weil *et al.* and Kivalo, respectively, in sulfated fatty alcohols and sodium soaps. Weil *et al.* have established that, in the sodium salts of sulfated fatty alcohols, surface tension-lowering capacity of 0.1 per cent solution is maximum in the case of the C_{14} surfactant and the foaming characteristic of 0.25 per cent solution is maximum at C_{16}. Kivalo (16) has shown that at a 2-millimolar concentration sodium oleate has a better tensio-active property than either stearate or linoleate. From the present investigation it is evident that sulfated monoglycerides of myristic and oleic acids have the nearest approach to the state of optimum hydrophilic-hydrophobic balance.

Thixotropic Suspensions

The colloidal phenomenon of thixotropy is an important physical property of a variety of suspending agents. Through utilization of thixotropy in the preparation of liquid suspensions it is possible to minimize or eliminate sedimentation and coagulation of the insoluble constituents which the product contains. Thus, a knowledge of the flow properties of thixotropic suspending agents should provide an insight into the formulation and development of suspended products of superior physical stability. Many suspending agents are known to possess thixotropic flow properties. Among these are bentonite, hectorite, Veegum, attapulgite, sodium carboxymethylcellulose, and Carbopol 934. It is unfortunate that there exists at the present time no generally accepted method or specific conditions under which rheological analyses for thixotropic flow should be made. However, numerous publications have appeared in which the investigators have taken advantage of rheological evaluation procedures for analysis of thixotropic systems.

This study by E. C. Foernzler, A. N. Martin, and G. S. Banker (*J. Am. Pharm. Assoc. Sci. Ed.* 49: 249, 1960) (*a*) evaluates the flow properties of two thixotropic suspending agents suitable for use in pharmaceutical systems, (*b*) evaluates the physical stability of medicinal products prepared with these suspending agents, and (*c*) attempts to obtain a mathematical relationship which would correlate thixotropy and physical suspension stability.

The two suspending agents employed in this project were bentonite, U. S. P., and Pharmasorb Colloidal (activated attapulgite).

In the case of both suspending agents employed the correlation of physical suspension stability and the degree of thixotropy of the suspending agent indicated that the sedimentation velocity was directly proportional to the reciprocal of the thixotropic area, or that physical stability is directly proportional to thixotropy.

As a result of this work it may be concluded that both suspension evaluation and suspension formulation may be benefited by the application of proper rheological procedures.

Emulsification Process

The preparation and evaluation of liquid emulsified products present unique and important problems to the pharmaceutical industry. To economically manufacture stable and pharmaceutically elegant emulsion products, the best power equipment should be selected for the required processing, and then this equipment should be used in an efficient manner.

In this investigation by G. H. Peck, H. G. Dekay, and G. S. Banker (*J. Am. Pharm. Assoc. Sci. Ed.* 49: 75, 1960) six common types of emulsification equipment were used to prepare various emlusion samples. The samples were observed for their (*a*) degree of creaming, (*b*) apparent viscosity, and (*c*) particle size distribution of the dispersed phase. The results were then statistically correlated to the equipment utilized for the various formulations studied.

When utilizing certain pieces of equipment to process several emulsion formulations, an appreciable emulsion temperature increase occurred. The Eppenbach Homo Mixer produced the greatest temperature increase, 20°.

Emulsions prepared with acacia were more viscous than those prepared with either gelatin or a Tween-Arlacel combination. Some differences in apparent viscosity were observed when the various pieces of equipment were utilized. Aging of the emulsion samples at room temperature did not produce appreciable changes in apparent viscosity.

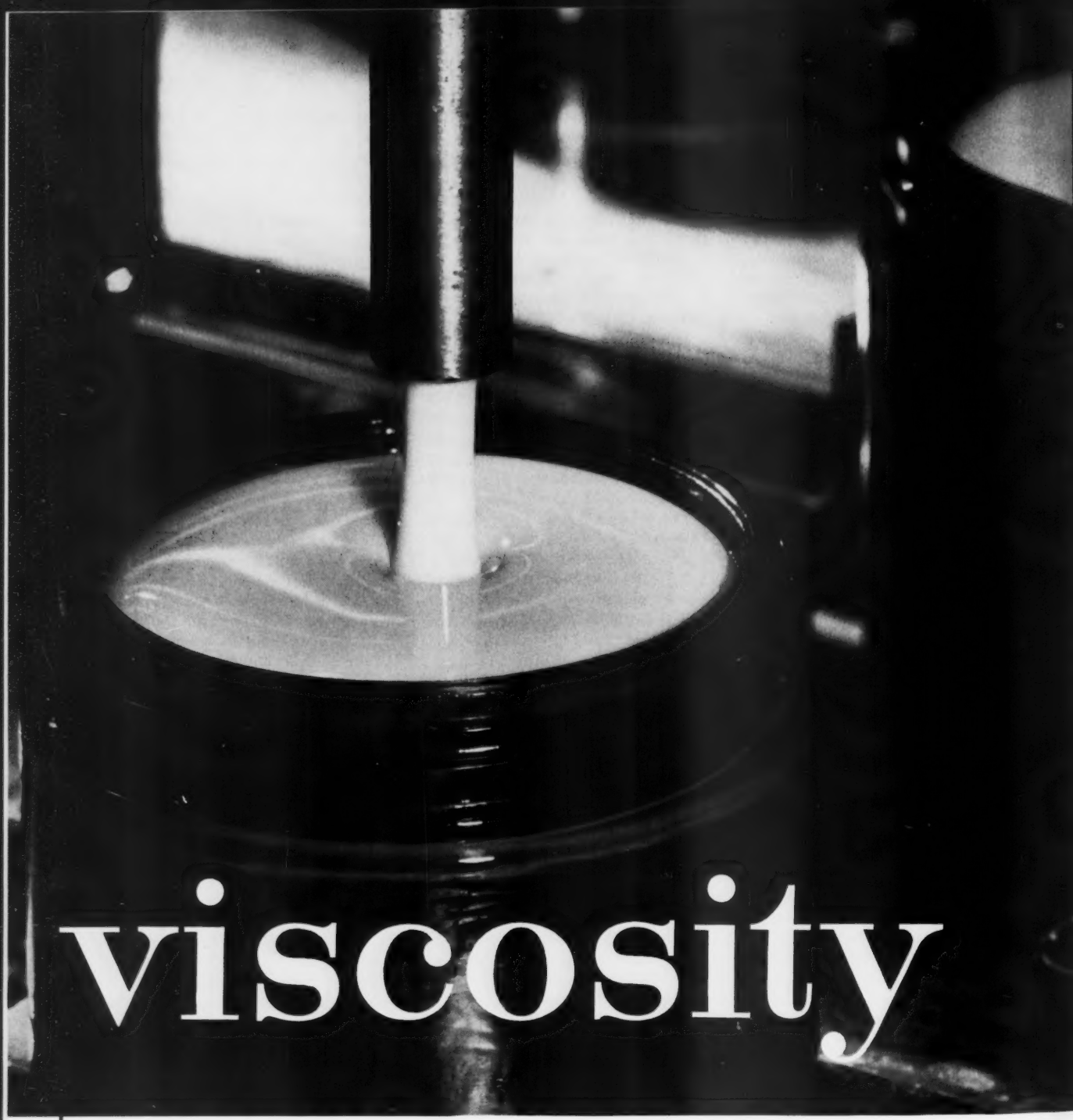
When using a simple sedimentation or creaming test conducted at room temperature, it was shown that the Manton Gaulin homogenizer at 8,000 p. s. i. produced the least amount of creaming in the emulsions.

The Manton Gaulin homogenizer was the most effective of all the equipment studied, using a decrease in particle size of the dispersed phase as the criterion for efficient emulsification processing. The homogenizer produced samples with the smallest average particle size for all four formulations studied.

Significant differences existed between (*a*) the three emulsifying agents, (*b*) the six pieces of processing equipment, and (*c*) the interaction between the emulsifying agents and equipment.

With the formulations used in this study, one pass through the homogenizer (pressure type) produced a much greater particle size reduction than any other piece of equipment used.

A refined oil such as cod liver oil emulsified with acacia is definitely easier to emulsify than liquid petrolatum with the same emulsifying agent, as shown by the smaller average particle size of the samples.



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Essential Oil Chromatography

Vapor phase chromatography is being used increasingly in many branches of applied analysis and perhaps with most success in the fields of perfumery and essential oils according to a review by W. I. Stephen (*Manuf. Chem.* 31: 159, 1960). Accurate and precise analyses of these complex mixtures have always been somewhat difficult to obtain, especially those of natural origin. Recent literature in this field indicates that many of the other chemical methods are no longer reliable if the V.P.C. results are to be accepted. Geranium oil and other essential oils containing terpenes are readily analyzed by the V.P.C. method. A recent paper shows geranium oil to contain eight components. The cineole content of eucalyptus and niaouli oils has been similarly determined. Celite impregnated with silicone E301 is used at 160° with nitrogen as carrier gas. *Cyclo*hexanol is used as the internal standard and has a retention time, under the experimental conditions of 3 min. compared with cineole of 6 min. The method is considered to be superior to the *o*-cresol method recommended in the French Codex.

Holmes has made a comparative study of the Glichitch and Fiore methods for the determination of linalol and other tertiary alcohols in essential oils by vapor phase chromatography. The results are interesting in that the products of the Fiore reaction (acetyl chloride and dimethyl aniline) are much simpler (mainly linalol acetate) than those given by the Glichitch reaction. The latter method is more susceptible to error, giving results some 3-5 per cent lower than the true linalol content, whereas the Fiore method is better with an average negative error of about 1 per cent. The author remarks that although both methods give reproducible results, the preference for the Glichitch procedure shown by the Essential Oils Subcommittee of the Society for Analytical Chemistry's Analytical Methods Committee may not be a wise one because of the consistently low results it provides. Recent chemical methods include a new colorimetric method for the determination of citral in lemon oil and a u.v. spectrophotometric method for citral in lemon-grass oil. The former method is stated to be specific for citral, unlike the most previous methods which gave only the total carbonyl content. The new method involves reacting the citral with vanillin and piperidine in absolute ethanol which results in the formation of a soluble emerald-green complex (max., 605 mμ). Dihydrocitral and pseudo-ionone interfere, but other carbonyl compounds give orange, yellow or red colors. For the u.v. spectrophotometric method, the optical density of an ethanolic solution of the oil is measured at 238 mμ where the molecular extinction coefficient is 14,787. Geraniol does not interfere, but myrcene, present in West Indian oils, has an adverse effect. A physical method, based on melting-point determination, is used by Klinger for the cineole content of eucalyptus oils. The method is simple and reliable and can be used directly on the commercial material. The second part of B.S. 2999 contains specifications for some 16 essential oils, including bay, cassia, citronella, clove, geranium, pimento and sandalwood.

Costus Root Oil

The costus plant, *Saussurea lappa* Clarke, belongs to the compositae family. It grows mainly in Kashmir and the upper regions of Kulu Valley of the Punjab at an altitude of approximately 10,000 ft. In India it is known under various names such as Kut, Kashmirja, Kushta, etc. It has a reputation for its medicinal properties and has been widely used in the indigenous system of medicine. The roots have also been known to contain a fragrant principle and used to be exported to China and Japan in large quantities for burning as incense in Buddhist temples. The essential oil contained in the roots has attracted the attention of perfumers in India and abroad. Consequently, the oil has found wide use as an ingredient in high grade perfumery.

Various methods have been used for the isolation of the oil. Direct steam distillation of the roots and steam distillation, as well as vacuum distillation of the resinoid have been used by many workers. The oil has been known to be rich in lactonic constituents, which are not so volatile in steam. Some of these are thermolabile and polymerize easily on protracted heating around 60-70° or more quickly at higher temperatures. For these reasons a solvent extraction procedure using alcohol, benzene, petroleum ether, ether, etc, has also been often employed.

In a series of recent communications Sorm has carried out investigation on the characterization of the constituents of costus root oil and has examined some of them systematically and elucidated their structures. He also isolated (5.8 per cent yield), the same dehydrocostus lactone of Naves by vacuum distillation of the oil at one stage (140-143° 0.5 mm) and extended and established its constitution as a guaianolide.

A Paul et al (*P.&E.O.R.* 51: 115, 1960) developed a solvent extraction procedure, using petroleum ether 40-60° under mild conditions and also carried it through pilot plant stage using stainless steel operational units. The whole procedure was so designed that at no stage during extraction, concentration, decolorization, separation of the constituents including large-scale chromatography, etc, was the surrounding bath temperature allowed to exceed 40± 2°. The result has been spectacular. We have been able to isolate an oil, in a yield of 6.6 per cent from the best grade October variety Kashmir costus roots and about 4 per cent from the Kulu variety of roots. The

oil thus obtained is practically free from polymerization or denaturing and is in the form in which it exists in the roots. It is fundamentally different from costus root oil isolated by any of the previous workers.

It is extremely rich in lactonic constituents. More than 50 per cent of the total weight of the oil can be obtained in the form of crystalline lactones by stage-wise cooling. The residual oil also contains a substantial quantity of lactones and esters. In this respect this 'special grade' costus root oil has not many parallels among the essential oils. This oil contains several unusual constituents which have not been previously reported by other workers. One of these is costunolide, the structure and stereochemistry of which have been already established.

On careful chromatography on alumina, the crystalline lactone-mixture obtained by direct cooling of costus root oil has been found to be constituted mainly of costunolide and dehydrocostus lactone, the latter predominating. It would appear that about 35 per cent of costus root oil obtainable is composed of dehydrocostus lactone. Costunolide occurs to the extent of about 15 per cent.

Menthol in Peppermint Oil

The official procedure for determining menthol in peppermint oil was developed by Power and Kleber and first appeared in U. S. P. VIII. The method has been frequently criticized and, over the years, numerous modifications have appeared in the literature.

In general, methods proposed for the analysis of menthol take advantage of the reactivity of the hydroxyl group. In the official procedure for peppermint oil, the menthol is esterified with acetic anhydride and sodium acetate. Menthol content is evaluated by saponification of the ester with alcoholic potassium hydroxide. Christensen and Pennington determined the menthol content of peppermint oil by acetylation with acetyl chloride. This reagent is also used for determining the hydroxyl number of fatty substances.

Methods for determining alcohol constituents in volatile oils are described by Guenther. Methods for evaluating alcohols in general, are reviewed by Mehlenbacher. These may be classified as acetylation (acetic anhydride or acetyl chloride), phthalation (phthalic anhydride), and formylation (aceto-formic acid reagent). Alcohols, including menthol, have been determined with lithium aluminum hydride by Lintner, Schleif, and Higuchi.

The present report by M. I. Blake (*J. Am. Pharm. Assoc. Sci. Ed.* 49: 175, 1960) describes a procedure for the estimation of menthol in peppermint oil by acylation with chloroacetyl chloride. The hydrogen chloride gas, a by-product of the reaction, is determined by the Volhard method.

The reagents employed in this procedure were selected because of their suitability for the conditions of the reaction. The temperature of the reaction was maintained at 101-102°, which was sufficiently high to insure completion of reaction in a reasonable time period, yet low enough that other products would not distil over. Since chloroacetyl chloride has a boiling point of 105°, whereas acetyl chloride boils at 51-52°, the former was selected as the acylating agent. Increase in boiling point is made at no significant expense to chemical reactivity. Toluene, with a boiling point of 111° served well as the reaction solvent. Menthol has a boiling point of 216°, far above the temperature of the reaction. To be certain that only the hydrogen chloride gas would be carried over, it was necessary to take additional precautions. The Friedrichs condenser with cold water passing through, served as a reflux condenser, permitting only gaseous products to pass through. In addition, the gases passed through a vapor trap maintained at a low temperature. A series of blank determinations showed a precision of better than 5 parts per 1,000.

The Volhard method was selected for the determination of the hydrogen chloride because the reaction could be followed conveniently by the nature and amount of the precipitate appearing in the graduated cylinder.

Preliminary investigation showed that the reaction, using sample weights indicated in this report, was complete within the one-hour time limit. On the average it required between four and five hours to conduct two runs and a blank. In routine analysis, a series of determinations may be conveniently effected by flushing the system with nitrogen gas prior to the introduction of a new sample and additional chloroacetyl chloride. However, for more accurate work it is suggested that a clean and dry reaction flask and vapor trap be installed for each run.

The results indicate that the proposed method gives results comparable to the official method and the chromatographic procedure reported earlier by Hamarneh, Blake, and Miller.

Work is currently in progress to apply this procedure to other alcohol-containing volatile oils.

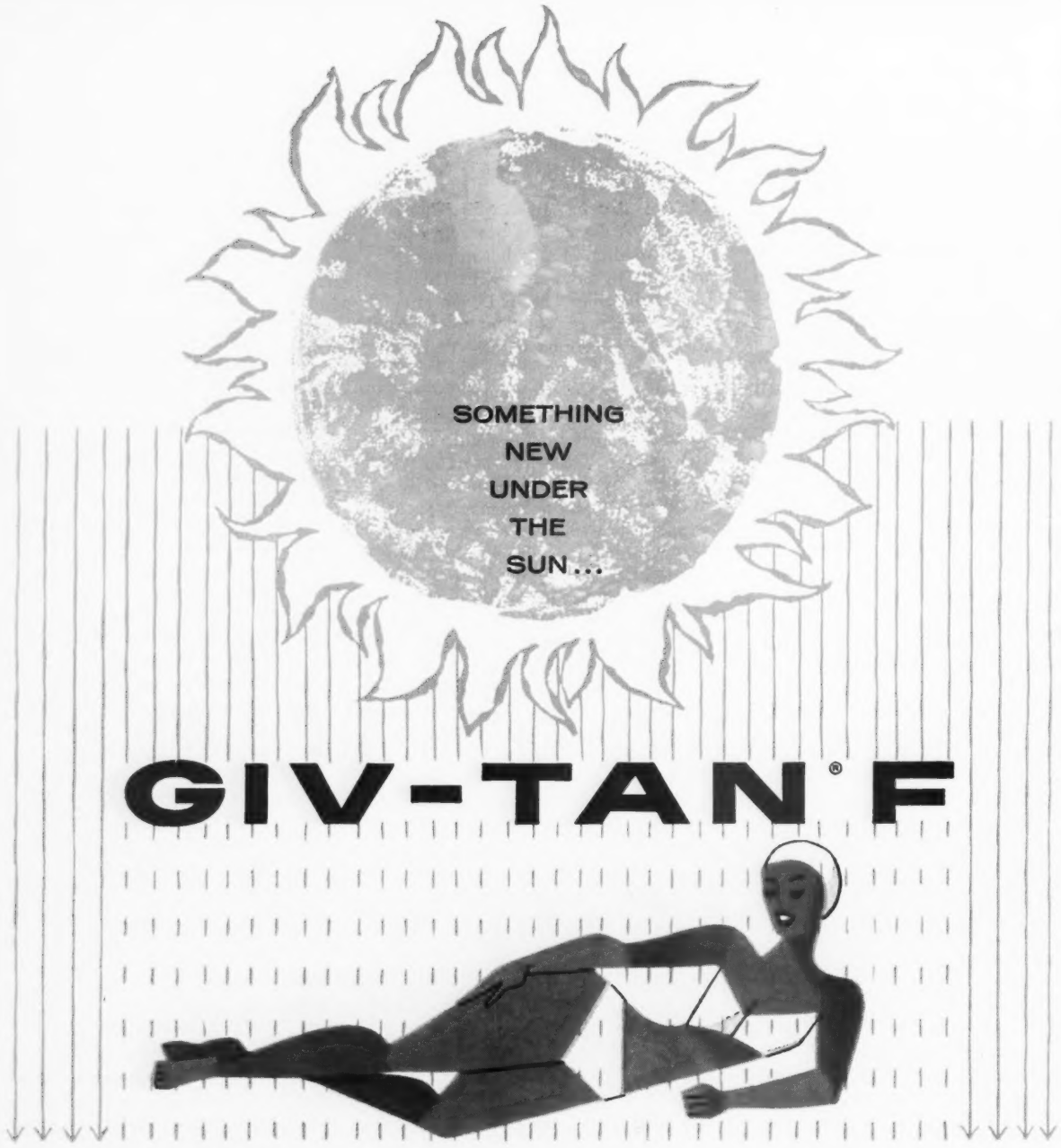
Ambergris Substitute

Twenty-five years ago, while investigating the main extractives of New Zealand trees, a new compound named manool (after the Maori name for *Dacrydium biforme*) was isolated. The chemical structure was shown to be diterpene alcohol similar in composition to a known compound, sclareol, which is present in the sage, *Salvia sclarea*. Interest was reawakened in manool in 1949 when it was shown that ambrein, the essential fraction of ambergris, had a similar structure and that the characteristic odor of ambergris was the result of the oxidation of ambreinolid derived from ambrein. In 1952 Swiss research workers prepared ambreinolid from manool and sclareol, thus opening a potential market for these substances, which might displace ambergris obtained from the intestine of the sperm whale.

Following a request from the U.S.A. in 1957, the pilot-scale production of manool was studied. *Dacrydium biforme* (the "yellow" or "pink" pine of Westland) contains at least 6 per cent manool on a dry-wood basis which can be extracted economically. There is no record that manool is present in this proportion in any tree outside New Zealand and its competitor, sclareol, occurs in a much lower yield. Samples of manool have already been examined by overseas manufacturers and found suitable for the perfume industry as a fixative, and for food flavoring.

The Director, Dominion Laboratory, D.S.I.R. Wellington, New Zealand, can supply further information on manool.

—*Manuf. Chem.* 41: 140, 1960



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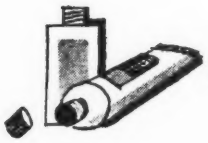


Advancing Therapy

Iron-Dextran Withdrawn

Lakeside Laboratories Inc., has temporarily withdrawn from the market its iron-dextran complex trade-named Imferon.

According to Harvey L. Daiell, M.D., executive vice president of the company, Imferon is being recalled at the request of the Food and Drug Administration.

"We are taking this action without availing ourselves of the formal hearing which the FDA would accord us because such a hearing might provoke undue public concern," Dr. Daiell said. "By this action we can further a calm, objective and scientific evaluation of facts," according to Dr. Daiell. "Because we believe Imferon is a safe and unusually useful drug, we are now in the process of setting up a totally independent and impartial medical committee to screen the available facts and suggest a future course of action."

This action follows a month-long controversy in British newspapers initiated by the publication of an article in the British Medical Journal which reviewed certain laboratory investigations conducted by Drs. H. G. Richmond, A. Haddow and E. S. Horning. In those studies, the investigators found that repeated and massive doses of Imferon produced sarcomas at the site of injection in a number of rats and mice.

Imferon, a prescription product used in the treatment of certain iron-deficiency anemias, has been marketed under license in the United States by Lakeside since 1957, and by its developer, Benger Laboratories, Ltd. since 1954. During this time, more than 12 million doses of Imferon have been administered to humans. Over this period, there have been no reports of Imferon causing cancer, or even precancerous lesions, in humans.

The British Medical Journal did not correlate the findings of these laboratory experiments with the clinical use of Imferon in man. "We cannot affirm the hazard to man, let alone measure it," the BMJ stated. However, the BMJ demanded Imferons "speedy withdrawal from any kind of general use in man."

Following widespread newspaper publicity, Benger suspended sales activities, but did not withdraw the drug from the market.

Purified Polio Vaccine

A new, potent polio vaccine of the killed-virus type has been developed in the Merck Sharp & Dohme Research Laboratories at West Point, Pennsylvania. This highly purified vaccine appears to meet the current public health need for a vaccine of uniform high potency.

The new vaccine was tested clinically in four locations for its capacity to immunize children who had had no previous polio virus experience. After only two injections given one month apart, the vaccine produced an immune response to all three types of polio virus in 91 per cent of the children.

The new vaccine contains no detectable monkey kidney tissue, and thus the possibility of damage resulting from multiple injections of kidney antigen is greatly reduced. Because of the high concentration of the practically pure virus material, the vaccine is administered in the more convenient 0.5 cc. dose compared with 1 cc. of the commercial vaccine.

The purification process starts after the three types of polio virus have been cultured in monkey kidney tissue. The medium is filtered to remove bacteria and other gross impurities and the virus is precipitated by yeast nucleic acid at pH 3.5. The precipitate is washed with water and dissolved in phosphate-buffered salt solution at pH 7.0.

Residual nucleic acid is now removed by enzymatic digestion with ribonuclease and desoxyribonuclease, and extraneous material precipitated by treatment with a 7.5 per cent sodium chloride solution at pH 4.5. The filtrate is clarified by low speed centrifugation and soluble impurities next removed at 30,000 rpm. The sedimented virus is resuspended and clarification repeated. The virus is finally killed by the Salk procedure.

Merck has applied for a patent on the process and is seeking approval from NIH to make and sell the new vaccine, named Purivax.

Contrast Medium

A new orally given contrast medium, bunamiodyl, was used in 500 consecutive patients referred for routine cholecystography. The order and severity of side-effects was less than that observed when compared with several other commonly used contrast agents. The quality and intensity of contrast values with use of a standard six-capsule dose (4.5 Gm.), regardless of patient weight, were satisfactory.

Unabsorbed colonic residual medium, often confusing when other mediums are employed, is minimal with bunamiodyl. If it does occur, it is usually diffuse in character and does not interfere with film interpretation.

On the basis of this evaluation, W. T. Meszaros and F. M. Rich (*J.A.M.A.* 172: 1884, 1960) believe bunamiodyl to be a safe and efficient orally given cholecystographic contrast medium. Fewer side-effects and some technical improvement over presently used agents were observed.

Bretylium Tosylate

Thirteen hypertensive patients were treated by R. E. Hurley and I. H. Page (*J.A.M.A.* 172: 2081,

1960) with bretylium tosylate for from 5 to 24 weeks. Orthostatic hypotension developed in all. Six patients receiving bretylium alone had a fall in supine diastolic blood pressure to less than 105 mm. Hg; this was sustained in only two patients and the other four showed a gradual rise to previous values. Six of eight patients receiving bretylium and other antihypertensive drugs had a transient fall in supine diastolic pressures to less than 105 mm. Hg. Studies made with repeated intravenous test doses of bretylium suggest that the drug is poorly absorbed and that drug tolerance develops with prolonged therapy. Troublesome facial pain was a prominent feature and, in conjunction with severe abdominal symptoms, required stopping administration of the drug in three patients. With use of the criterion for good blood pressure control, which is maintenance of supine diastolic pressure averages of less than 105 mm. Hg, bretylium tosylate was an ineffective antihypertensive agent in 11 of the 13 patients treated.

Aspirin in Arthritis

A study of 244 patients with rheumatoid arthritis followed for about six years has been made by F. D. Baragar and J. J. R. Duthie (*Brit. Med. J.* 1960, p. 1106) with particular reference to their intake of salicylates, hemoglobin levels, and the incidence of dyspepsia or ulcer. The great majority were on regular doses of aspirin.

Over the six-year period the group showed a significant increase in hemoglobin level. A smaller group not on regular aspirin showed a comparable increase.

Only three patients (1.2 per cent) were known to have developed clinical or radiological evidence of peptic ulcer while on aspirin. Seven other patients had or were suspected of having an ulcer before they developed rheumatoid arthritis.

The incidence of peptic ulcer in this series compares favorably with that in the general population.

It is concluded that the great majority of patients with rheumatoid arthritis can tolerate regular aspirin without an increase in anemia. The dangers of causing peptic ulceration or precipitating gastro-intestinal hemorrhage appear to have been greatly exaggerated.

Glycyrrhetinic Succinate

Glycyrrhetinic acid hydrogen succinate as the disodium salt has been shown by R. S. H. Finney and A. L. Tarnoky (*J. Pharm. Pharmacol.* 12: 49, 1960) to have a powerful anti-inflammatory action in experimental conditions in rats. Assessed by the cotton pellet method it had 0.23 times the activity of hydrocortisone hemisuccinate. Its acute toxicity was low and it has been given intravenously in relatively high doses. Subcutaneously, when injected in high concentrations, the drug had a local necrotic effect. In rats it affected water and mineral metabolism but not in cats. It had no effect on the 17-ketosteroid or 17-hydroxycorticosteroid excretion in rabbits. The drug showed a slight hemolytic action *in vitro* at concentrations well above those injected clinically; at these high concentrations an anticoagulant effect also appeared. The results suggest that the disodium salt of glycyrrhetinic acid hydrogen succinate may be a valuable drug in the treatment of inflammatory conditions in man.

Analgesic Potentiation

W. Abenhardt (*Die Medizinische*, 1959, No. 40,3x) reported that thalidomide (N-phthalyl glutamic acid imide) enhanced the analgesic effect of the APC combination, so that S. C. Harris and J. P. Allgood (*Proc. Soc. Exptl. Biol. Med.* 103: 580, 1960) studied the effect on human subjects. In ten human subjects, 2 APC tablets plus 25 mg. of thalidomide, or 2 APC tablets plus 32 mg. of codeine sulfate elevated the pain threshold, as compared with the negative action of no treatment, placebos, or two APC tablets alone.

New Appetite Depressant

Benzphetamine was tested in a double blind study as an appetite depressant. The compound, synthesized in the Upjohn Company laboratories, is (+) N-benzyl-N, α-dimethylphenethylamine hydrochloride, and the investigation was conducted by B. Simkin and L. Wallace (*Current Therap.* Res. 2: 33, 1960).

Forty-three patients were divided into two groups, 20 receiving the medication, 23 a placebo. All were on a 1,000 calorie, high protein diet. Patients receiving benzphetamine exhibited a loss of weight throughout the 20-week study, but control patients lost a negligible amount after the first four weeks. Average weight loss was small. Benzphetamine fulfills the following requirements for appetite-curbing medication: it significantly enhances weight loss, is non-toxic, does not depress mood and does not stimulate the patient unduly.

Dornwal Tranquilizer

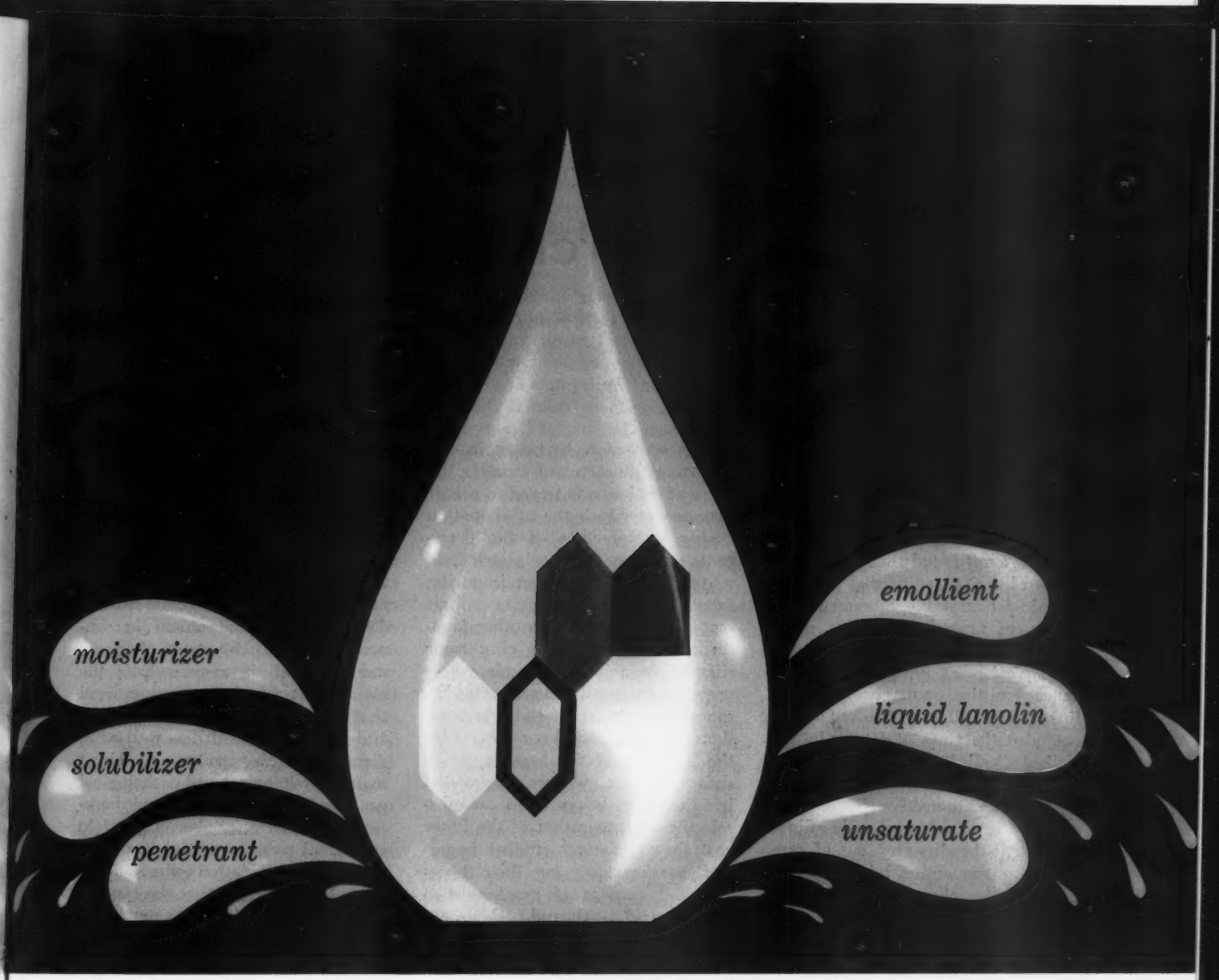
Dornwal, a drug for the treatment of anxiety and tension states, has been introduced by Maltbie Laboratories Division of Wallace & Tiernan Incorporated. The new chemical entity is 1-m-aminophenyl-2-pyridone, generic name amphenidone, and it is said to act selectively on the central nervous system at both the cerebral and cord levels. It is being recommended for the treatment of anxiety and tension states, a wide variety of psychoneuroses, premenstrual tension, menopausal syndrome, tension headache, alcoholism, and behavior problems in children. Side effects attributable to Dornwall, used at recommended dosage, have been minimal. Incidence of drowsiness was reported at less than 2 per cent of 593 patients, so that the compound seems particularly well suited to the ambulatory patient.

Psoriasis

Morphologic and physiological changes in psoriasis were studied by E. J. Van Scott and R. P. Reinertson (*J. Invest. Dermatol.* 33: 357, 1959) by means of topically applied and systemically administered chemical agents. Clinical clearing of the lesion of psoriasis occurred following intravenous administration of methiotrexate, 5-fluorouracil and actinomycin D, and following occlusive topical application of podophyllin, colchicine, mercury, nitrogen mustard, and liquor carbonis detergens.

The clinical effects on the lesion of psoriasis of both topically and systemically used therapeutic agents were directly correlated with depressed cellular reduplication of the epidermis. With systemically used agents depression of cellular reduplication in the epidermis paralleled a similar depression in other tissues of the body.

The morbid state of the epidermis in psoriasis can be defined in terms of excessive mitotic activity and incomplete cellular maturation.



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Skin Research

Physiology of the Skin 1958/59

Chemistry

Fischer obtained from a study of alkali neutralization no vital information on detergents as a cause of eczema. *Levit* found that watery extracts of various epidermal keratins contain fat insoluble fluorescent materials, of unsettled identity, often quenched in the intact keratin structure. *Gallop et al.* presented evidence for the occurrence of ester linkages in collagen. *Cruise, Jeffery* extended the work of *Hall* who described "cellulose" isolated chemically and enzymaticailly from mammalian connective tissue. They reported on polysaccharide fibres which can be dissected out of connective tissue and which exhibit none of the chemical or physical properties of collagen and elastin and which have an X-ray diffraction pattern and other features reminiscent of cotton (cellulose) fibres. *Priestly, Foster* determined epidermis and corium values for ascorbic acid. *Wheatley and Reinertson* have analyzed the fast acting sterols in skin which give a 90 second Liebermann-Burchard reaction, and they have established that the cellular part of the human epidermis, as distinct from the surface fat, contains enough 7-dehydrocholesterol (provitamin D) to act as an adequate source of vitamin D through conversion by sunlight in the cells themselves. *Reinertson and Wheatley* also made studies of epidermal lipids excluding surface sebaceous contamination but separating the stratum malpighi from the horny layer in the assay, from which a high phospholipid content was found in the cellular layer, declining markedly with keratinization. A special fatty acid composition revealed by gas chromatography was found to differ greatly from that of sebum. *Lenihan et al.* found the arsenic content to be raised in certain female human hair samples, the cause of which was traced to a hair shampoo in which the sulphonation during manufacture of the detergents was done with sulphuric acid containing arsenic as an impurity. *Jarrett* found that the inner hair root sheath differs form other keratin structures in containing some ribonucleic acid compounds whose presence in small amounts was responsible for certain staining reactions and possibly also essential for the integrity of the keratin of the sheath in some measure. Ultraviolet irradiation in heavy doses caused a selective disintegration of the inner root sheath. *Steiner* studied hyper- and parakeratoses for their histochemical content of mucins, ribonucleic acid, -SH and -SS groups (using the DDD reagent), from which the current views on the relative amounts of -SH and -SS in different kinds of cornification could not be confirmed. *Fregert* determined the silicon content of skin and found by solubilization tests that most of it was concentrated in the more heavily keratinized layers (though not in parakeratotic scales) and in the hair epicuticle.

Metabolic and other processes

In the Howard Fox Memorial Lecture *Jadassohn* presented a philosophy of dermatological research, emphasising the physiological topics investigated at the Geneva clinic, such as pigmentation, sweating and test objects for radiation, in relation to pressing clinical problems. *Shelley, Arthur* gave an extensive survey of the physiology of the skin extending from June 1951 to June 1957. They have divided the material into nine sections according to the anatomical elements in which they have attempted to focus down on unifying conceptual advances. *Lorincz, Stoughton* specially reviewed subjects as, keratin, the keratinization process, surface lipids and their excretion, the mucopolysaccharides of cutaneous ground substance, cutaneous carbohydrate metabolism and cutaneous effects of proteolytic enzymes. *Asboe-Hansen* described hormonal effects in connective tissue. He states that the mesenchymal tissue constitutes the major part of the organism, and that the hormones moderate its life and function in health as well as in disease. *Langhof* points out that many physiological and pathological processes, toxic substances and therapeutic measures involve changes in epidermal redox potential in one or more known oxidation reduction systems. It is apparent that the concept of redox potential is of as much significance in the skin as elsewhere. *Flesch* discussed some possible ways by which keratinization may take place and some of the substances of low molecular weight simultaneously produced. *Gupta* studied conversion of α to β keratin during stretching of hair by measuring the correlated intensity changes in the X-ray diffraction picture. The change is exponential. *Gupta's* equation for calculating combined intensity changes in the diffraction picture was sharply criticized by *Woods*. *Fraser et al.* made a correlation between the electron microscope picture of the α-keratin microfibril, diameter 60 to 80 A, its interstitial cystine-rich matrix, and the influence of hydration at different stages of maturation and artificial treatment of the keratin, on the low and high angle X-ray differentiation patterns, as an indication of the way α-keratin is organized. *Glen* showed that the rate of hair growth can be clearly accelerated in animals by trauma, and vasodilatation (e.g. sympathectomy) apart from trauma.

Gross reported that warm collagen solutions may form a gel which increases in stability with time. This is probably due to a longer opportunity for stable bonding between the macromolecules, and will perhaps account for the more stable features of ageing collagen quite independently of other chemical or biological influences. *Jarrett* pointed out that frozen unfixed skin sections stained with a fluorochrome dye show only a gel structure in the collagen, and that the elastic fibres divide the collagen gel up into fields. The elastic moreover plays a greater part in determining the appearance of so-called collagen bundles than usually imagined, and the histological fixation accounts for a greater part of the final fibrous structure and orientation of collagen seen in normal sections. *Brown, Consden* found that the shrinking of collagen on heating takes place at lower temperatures in the less mature and more unstable collagen fibres. *Harashima, Kurato* found that generally speaking the rate of insensible perspiration increased with the rise of air temperature. In some subjects the perspiration was lower in May, June, September and October than in the cooler seasons, while the skin temperature was higher in the former. *Hall* found that heat-pain, like other sensory modalities, also exhibits a varying threshold depending on the area of skin stimulated. *Rorsman, Rosengren* found a close correlation between the basophil count and the blood histamine levels indicating that these cells are the main source of the blood histamine, although some plasma histamine may at times be a contributor to the total value. The blood eosinophils are not primarily connected with the histamine values of whole blood. *Clendenning et al.* gave a clear summary of the normal and abnormal metabolism of serotonin, referring to the skin changes in phenylketonuria and malignant carcinoid. Serotonin appeared further to play little part in other types of disorder, but the vascular reactions of atopic subjects were abnormal when serotonin was injected locally. *Newcomer et al.* reported that properdin, a serum euglobulin partly responsible for non-specific immunity was roughly normal in the blood in various dermatoses.

Photobiology

Daniels, Imbrie using a portable reflectance photometer working with optical interference as well as the usual glass filters, specified the filters needed for accurate measurement of hemoglobin and melanin increase in the skin with erythema and tanning after sun exposure. *Daniels* reviewed kinetic factors in cutaneous photobiology in terms of the basic physical chemistry involved. *Daniels* gave an up to date review of factors influencing the spectral quality of sunlight, its mode of action on molecules, the optical and electrochemical factors modifying its effects on the skin, and the local and systemic results. *Claesson et al.* performed experiments on the two types of ultraviolet erythema, in which a photodynamic role ascribed to the stratum corneum could not be shown, and the reactions were diminished by an agent known to block serotonin. *Pathak, Fitzpatrick* by measuring the erythema-producing effect of long ultraviolet rays, examined a wide variety of psoralen derivatives to determine the molecular configuration essential for the production and enhancement of this effect. *Fitzpatrick* presented evidence that near-ultraviolet rays are able to reach the melanocytes of the hair follicle and induce pigmentation in the presence of methoxypsoralen. *Daniels et al.* reported that methoxsalen was without influence in promoting tanning by sunlight. The experimental methods used were noteworthy and revealed other aspects of the tanning process. *Imbrie et al.* found that the skin remains less liable to erythema from sunlight for some weeks after an exposure combined with methoxsalen. *Fowlks* reviewed the atomic grouping and steric properties of photodynamic compounds and the factors determining their effects.

Physical Processes

Monash, Blank studied the passage of water vapor in both directions through the skin by measuring insensible water loss, after graded stripping, outward, and by timing the rate of penetration of a local anesthetic inward before and after graded stripping. It was concluded that the inner portion of the stratum corneum offers the greatest barrier to water transport either way. The rate of restoration of the barrier after damage was measured for both types of water conduction. *Lotmar* reported that the skin pH returns to normal within a day after a hot bath, whether there are mineral salts present in the water or not. *Beare et al.* presented a comprehensive study on the normal skin surface pH in the newborn, in which the sex of the baby was shown to be without influence, but the sites tested showed certain regular pH trends. The pH was higher in the scalp and the folds, and was different from the findings in older children previously reported. Changes of pH with age must form part of the definition of a seborrhoeic diathesis if this should be attempted in terms of surface pH. *Van der Horst* studied the normal reaction of the skin temperature of men to various environment temperatures. The temperature of the thumb and the toe showed the greatest variations. The subjective observations of the persons do not appear to conform to the objective data obtained by measurements. *Benjamin, Clare* studied the changes of electric potentials of skin, induced by heat. The findings are in agreement with the concept that the changes are due to a change of cellular permeability. *Rutenfranz* presented a detailed and comprehensive review of the electrical resistance changes in the skin, with 142 references, and with special emphasis on the significance of sweat gland activity. *Nakayama, Takanagi* concluded from their studies that galvanic skin response recorded by endosomatic method is a summation of two processes. The negative process is caused by changes of apparent skin resistance and the positive process induced by electrical activity of sweat glands. According to *Fuchs* the electrical conductivity of the skin in endogenous eczema is altered more in relation to changes in sweating than an abnormal state of the skin circulation.

—*Dermatologica*, 119: 360, 1960

Mornidine (Searle) is indicated in the treatment and prevention of nausea and vomiting in pregnancy and other conditions. Each tablet contains 5 mg. 10-[3-(4-carbamoylpiperidino)propyl]-2-chlorphenothiazine. It is available in bottles of 25, 100, and 250 tablets.

Neo-Aristoderm Foam (Lederle) is a greaseless foam containing neomycin sulfate and Aristocort triamcinolone acetonide.

(Continued from page 664)

min A deprivation. These latter two aberrations are mediated through deviations from the normal synthesis and delivery of sebum. In view of the evidence presented, we may postulate that ascorbic acid starvation elicits dryness and roughness of the skin. Any therapy undertaken to correct dry skin must take this contributory factor into consideration. Brief mention should be made of other agents with anti-permeability properties such as the bio-flavonoids, citrin, and hesperidin, which are found in citrus fruit and in other sources. At one time these compounds were labeled vitamin P, the anti-permeability vitamin. Szent-Gyorgyi[15] reported a factor other than ascorbic acid existent in red peppers and in the peel of citrus fruits which decreased capillary fragility and capillary permeability. This substance was isolated and named hesperidin. Kugelmass[16] administered eriodictyol and hesperidin in the treatment of allergic, infectious, and nutritional purpuras and concluded that vitamin P constitutes another valuable adjuvant in the management of these conditions. Since vitamin C is not the only anticapillary fragility factor, it would seem advisable in any abnormality ascribable to ascorbic acid to supply bio-flavonoids with ascorbic acid, for maximum curative effect. This may explain why whole citrus juices are frequently more effective than synthetic vitamin C by itself.

Unsaturated Fatty Acids: Linoleic—Linolenic—Arachadonic

Fats are the richest source of food energy, providing 9.3 calories per gram as compared with 4.1 calories for carbohydrates and proteins. The liberation of energy from fats is but one function coexistent with many others of great complexity and importance invested in this foodstuff. Relevant here are those biochemical reactions influential in the preservation of skin health. Hansen[17] noted an improvement in eczema in 11 infants upon the supplementation of corn or linseed oil; at the same time he discovered that the levels of unsaturated fatty acids in the blood of these eczematous patients was below normal and rose during treatment with the oils employed. Schneider and Worne[18] advise that in cases of cholecystitis and cholelithiasis, where the dietary fat is restricted to an absolute minimum (less than 1 per cent to total caloric intake) for one year or longer, circulating blood levels of unsaturated fatty acids decreased with the concurrent development of dry skin and various degrees of desquamation or peeling. Watkins et al.[19] report a parallel experience with patients kept on a Kemper rice diet for long periods. Carlson[20] states: "Processing such as hardening (hydrogenation), of the liquid fats so changes the essential fatty acids that although they are still useful as a source of energy, they can no longer perform their specific roles in human life and nutrition. Unless minimum

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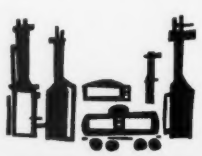

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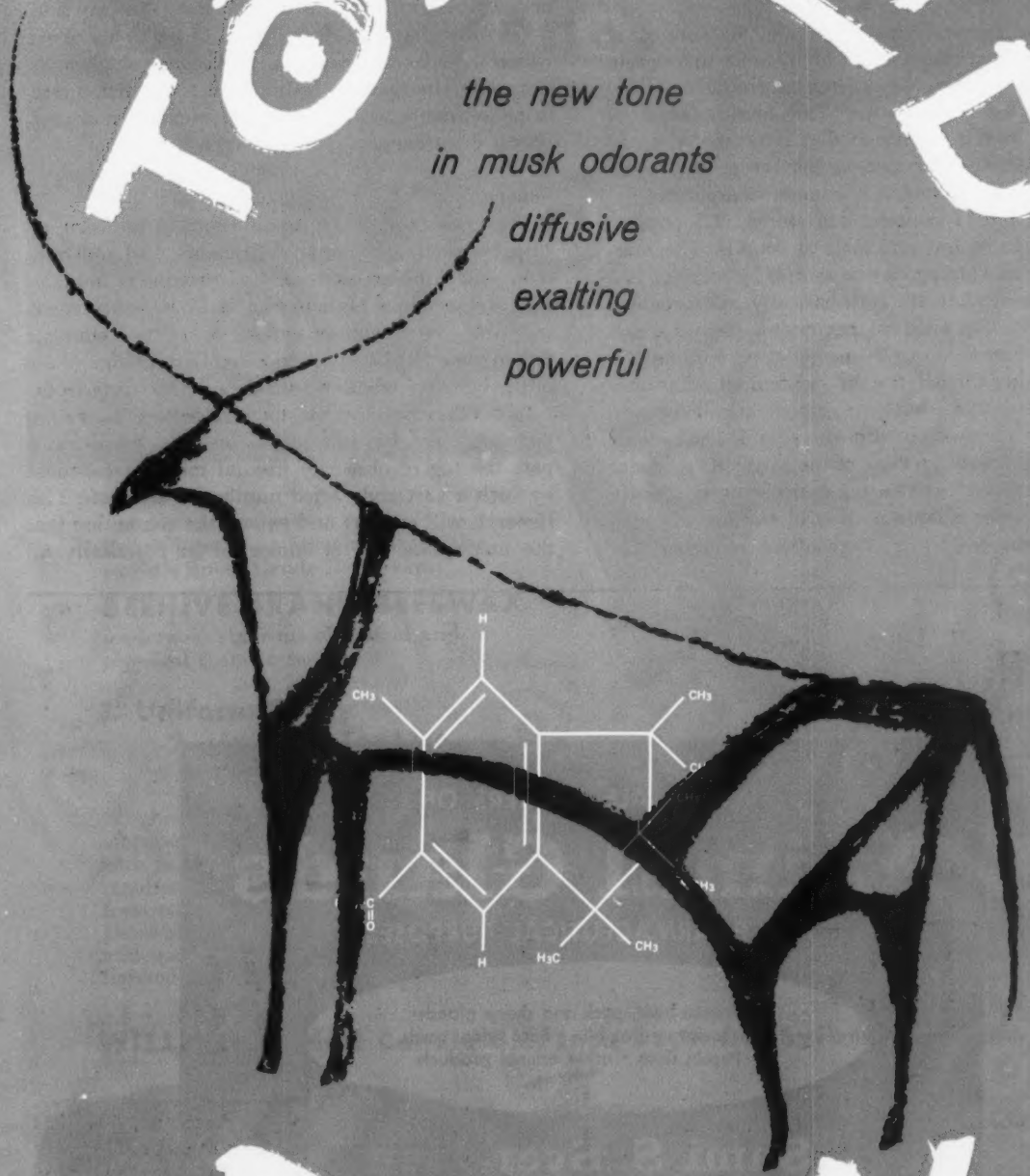

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amounts of fatty acids are present in the diet," he continues, "the skin becomes scaly and inflamed, growth is interfered with, reproductive processes are impaired and kidney disorders may result." The references to the relationship between skin pathology and essential fatty acid deficiency requires no interpretation. Indubitably many of today's skin problems are traceable to an insufficiency of these substances.

Carlson's remarks regarding the hardening of liquid fats assume augmented significance upon probing the quantitative and qualitative character of the fats consumed in America. The total amount of visible fat in the American diet is estimated to be about 45 pounds per person per year; individual components are butter, 7.2 pounds, margarine, 6.4 pounds, lard, 10.1 pounds, shortening, 11.3 pounds, and other edible fats and oils, 10 pounds. The margarine and shortening can be said to be more or less identical, since they are both basically hydrogenated vegetable oils (at least 80 per cent saturated), and together comprise about 39 per cent of the total fat used. Whether the balance, 61 per cent, of other nonhydrogenated fats is able to supply the body's requirements for linoleic, linolenic, and arachadonic acids is a question. In view of the available evidence regarding the vital role of the essential fatty unsaturates, and, since a large portion of our fats are artificially denatured by hydrogenation, we must suppose that this situation is a contributory factor in today's common skin ailments.

The activity of lesser known nutritional biochemicals in the chemistry underlying dermatological metabolism, that is, such compounds as inositol, para-amino-benzoic acid, vitamin B_{12}, is still uncharted. The minerals, while essential to optimum body function, have not been identified with any specific dermatological breakdown when deficient. We may safely assume that the deprivation of vital nutrients, which includes the minerals, will sooner or later unfavorably alter general body chemistry which, directly or indirectly, will be reflected eventually in peripheral disturbances.

Summary

We have in some degree illuminated the relationship between nutritional deficiencies and the common skin disorders with which everyone is familiar. This depreciation in dermatological integrity is responsible for a substantial sector of the cosmetic dollar volume. The products involved in this phase of the cosmetic business face some uncertainty in the future. The present massive, relentless attack on pathology and the role of diet in disease will dissipate the fog of obscurity around man's harassment by such a vast and varied number of ailments. This research will support and extend the contention that the inadequate diet is etiological in practically all

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skin problems of concern to the cosmetic industry. Full implementation of present and future nutritional science will prevent and cure the discussed skin maladies. Acceptance of this prediction has already assumed tangible form: one of the larger pharmaceutical houses recently embarked on a promotional campaign to increase the sales of their popular vitamin product, stressing the theme, "beauty is more than skin deep;" another new vitamin preparation has simultaneously appeared employing the motif, "beauty from within." Both of these slogans, implying volumes of truth in but few words, were incorporated in an earlier related review.[21]

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QUICK-BREAKING FOAM AEROSOL

(*Continued from page 611*)

Lauric diethanolamide	0.50
Acetone	35.00
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Dissolve Polawax in warm alcohol and then add the rest of the ingredients. Fill concentrate while still warm. Use 92 per cent of the above concentrate with 8 per cent Genetron 12/114a (40:60).

ITCHING: TYPES AND TREATMENT

(*Continued from page 617*)

eradicated, this often does not end the itching. In acute vulvitis, sitz baths, douches, or both, are sometimes the only medication which is helpful and well tolerated. Topical hydrocortisone is less effective in vulvar itching than in pruritus ani. However, topical creams containing estrogens, for example, Premarin (Ayerst), or a mixture of estrogens and hydrocortisone (Hist-A-Cort-E, Dome; Premarin-HC Ayerst) have been proved very useful, particularly in itching associated with leukoplakia.

By far the greatest help in both anal and vulvar itching are the topical anesthetics and corticosteroids.

(*Continued on page 686*)

Readers' Questions . . .

After Shave Preparations: *What factors should be considered, in your opinion, in the formulation of a modern after-shave lotion?* CHICAGO

Basically, and probably including the major volume in this field, after-shave lotions contain from 40 to 60 per cent of alcohol for astringent and styptic action, along with an attractive perfume. The latter is of paramount importance and the effort spent in selecting the most attractive odor within a given cost range is completely justified. Astringent and styptic action as well as pH control are enhanced by the inclusion of very small quantities of aluminum or zinc salts, using a salt that is compatible with the relatively high alcohol concentration. A further addition would be an antibacterial agent such as a quaternary, selected for low irritation potential, or hexachlorophene. Film formers (other than quaternaries) are also potentially useful additions to these products. Only a small quantity of cetyl alcohol can be added to the hydroalcoholic solution, but our attention has recently been called to the possible use of Carbide's "Polyox." A small proportion in the after-shave lotion gives a high degree of lubricity and leaves an altogether invisible smooth film on the face. Emulsions of various kinds have been occasionally offered for after-shave use, and these present an obvious opportunity to add a variety of useful ingredients. Unfortunately, for the most part they do not generally provide the very quick drying that men prefer. A properly formulated aerosol would, however dry quickly and permit inclusion of lubricants and emollients. Elsewhere in this issue, a special quick-breaking foam aerosol is described. The foam is applied to the hand and quickly breaks down when rubbed onto the face to leave a liquid that dries rapidly and leaves a smooth film. On the basis of the formulation offered, useful variations will readily occur to the laboratory man. Certainly, an after-shave preparation formulated beyond odor alone and conveniently packaged, should enjoy expanded acceptance with men who use an electric razor as well as those who stay with conventional razors.

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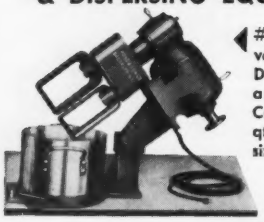

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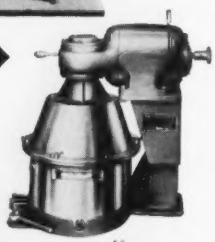

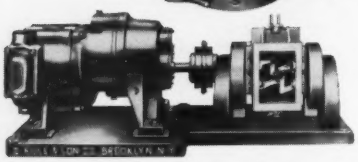

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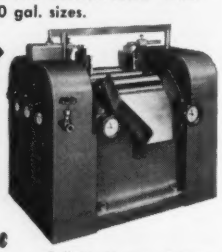
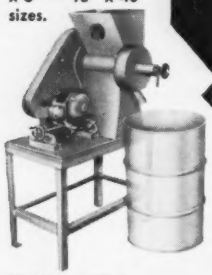
#52LC—4½"x10". Three Roll Mill with water cooled rolls, one point adjustment and quick roll release. 2½" x 5" — 16" x 40" sizes.





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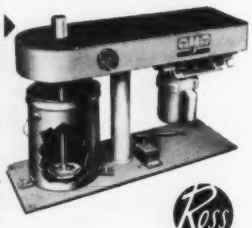

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(*Continued from page 684*)

and oral tranquilizers.

The relief of severe generalized itching usually involves a combination of methods, which includes drugs to give immediate sedation, soothing baths, proper choice of topical applications and, at the same time, analgesic drugs of slow and prolonged action.

When extensive areas of the skin are itchy and dry, as in senile pruritus, bath additive preparations such as oils and colloid sitz baths have been widely used. Colloidal oatmeal (Aveeno), and soy protein (Soyaloid; Dome) are the most popular colloids. Alpha Keri (Westwood), Luboil (Texas) and Aveeno Oilated (Aveeno) are the chief bath oil additives, containing an emulsifier to disperse the oil. More simply, laundry starch, biocarbonate of soda and potassium permanganate are often used. The tar bath, made from preparations designed especially for the purpose, is sometimes used for patients with eczematous eruptions, or other chronic itching dermatoses.

Special drugs, such as small doses of the alkaloids, pilocarpine, ergotamine, and papaverine often relieve itching in patients with jaundice, cirrhosis of the liver, and the like. The mechanism is unknown.

In severe *generalized* pruritus, moderate or complete relief may follow the use of glyceryl trinitrate or erithrityl tetranitrate, when other measures have failed. The mechanism of the antipruritic action is probably related to changes in the cutaneous circulation.

Quaternary ammonium compounds, particularly the tetraethylammonium ion, have been employed in patients with various dermatoses in order to reduce itching, burning, pain, and paresthesia. The mechanism of the relief may be the ability of the drug to inhibit certain cutaneous axon reflexes.

Topical applications are still the most important of all the measures used for the relief of pruritus, although the oral tranquilizers are piling up impressive clinical records. Wet dressings, lotions, and ointments are all used. Treatments are changed to suit the stage of the disease. Actually, treatments usually vary inversely with the severity of the disease, the acute stage requiring mild, soothing therapy and a less severe disease, more aggresive therapy. For acute, vesicular, edematous, or moist eruptions, wet dressings and the baths are most effective.

Wet dressings or cold compresses afford relief in many ways when properly applied. They remove crusts and debris, open blisters, maintain drainage and a uniform temperature, and by macerating the skin they exert a keratolytic effect. The most famous is aluminum subacetate solution (Burow's solution). Potassium permanganate, saline, milk, silver nitrate, boric acid, witch hazel, lime water, and other preparations have met with considerable success, where wet dressings were required. A disadvantage of wet dressings is that they have to be changed frequently,

(*Continued on page 688*)

Industry's Books . . .

United States Pharmacopoeia XVI, *published by authority of The United States Pharmacopeial Convention, Inc., Prepared by the Committee of Revision and Published by the Board of Trustees, 1200 pages, Mack Publishing Company (1960) Bound in Roxite C. L. Vellum,* **$10.**

Revised every five years, this 1960 edition will replace U.S.P. XV, which was published in 1955. U.S.P. XVI will contain 908 monographs, an increase over its predecessor which, in turn, carried more than U.S.P. XIV. The revision was made by 60 experts, of whom 20 are physicians and 40 are qualified individuals in allied sciences. This edition describes new and improved assay methods for achieving higher quality standards. There is an added chapter on biologics, a feature of which is their proper method of storage. Further information on chromatographic methods for assaying drugs is also included. This edition becomes effective from October 1, 1960.

Fluidization and Fluid-Particle Systems, *by Frederick A. Zenz, Adjunct Professor of Chemical Engineering, Polytechnic Institute of Brooklyn, and Donald F. Othmer, Professor of Chemical Engineering, Polytechnic Institute of Brooklyn, 513 pp., Reinhold Publishing Corp., New York (1960), cloth,* **$15.**

The result of over 17 years of research and study, this book provides a convenient, centralized information source on all major aspects of fluid-particle technology. The authors cover modern developments in fluid-solids processing, including the moving bed techniques, fluidization, and transport reactors. New unpublished material has been included in many of the chapters, and the entire subject matter has been arranged in logical order. This book enables the practicing engineer in any field to compute an answer to his problem, to familiarize himself with recognized experimental or theoretical bases, and to find, if necessary, more detailed information.

Principles Of Unit Operations, *by Alan S. Foust, Leonard A. Wenzel, Curtis W. Clump, Louis Maus, and L. Bryce Andersen, Department of Chemical Engineering, Lehigh University, 578 pp., 8½" X 11", John Wiley & Sons, Inc., New York, (1960), cloth* **$15.**

The traditional unit-operations concept has been a major factor in the phenomenal success of chemical engineers and chemical engineering in the last 50 years. This book, however, breaks away from the traditional treatment and offers a new approach that is more economical in time. The unit operations are presented as unified groups of operations stemming from identical fundamentals. The developments are built up from a simplified physical model or a basic mathematical relation, or both, using generalized notation. After a thorough coverage of the simplified models, the treatment progresses to the more complicated handling of realistic problems by applying the general equations to the specific operations. Emphasis is always placed on the general principles underlying groups of operations, and an attempt is made not to obscure the fundamentals of the processing operation by the use of the elaborate mathematics required for extremely complex problems.

Dr. Schmidt's Baby Name Finder, *by J. E. Schmidt, M.D., President, The American Society of Grammatolators, 389 pp., with over 200 beautiful baby pictures from the collection of Mead Johnson & Co., Charles C. Thomas-Publisher, Springfield, Ill., (1960), beautifully bound* **$10.50.**

While the Baby Name Finder is intended primarily for parents seeking a name for their newborn, this is by no means the book's only purpose. As a veritable thesaurus of given names, replete with interesting interpretations, accurate etymology, and colorful background, this work will prove to be a fascinating reading and reference book for anyone interested in names, whether his own or those of others.

Industrial Packaging, *by Walter F. Friedman, Vice President Dasol Corp., and Jerome J. Kipnees, Vice President Atlantic Gummed Paper Corp., 536 pp., Illus., John Wiley & Sons, New York, (1960), cloth* **$11.50.**

This book establishes those criteria controls which are indispensable for the formulation and execution of sound packaging policy. Offering a thorough and up-to-date survey of packaging materials, methods, and equipment, the work will prove a valuable aid to all those facing the problem of adequate product protection at minimum container, labor, and transportation cost. The authors include an economic analysis of the field, and organize and define basic principles applicable to all package-using industries.

The Merck Index, *Seventh Edition, Merck & Co., Inc., Rahway, N. J. (1960), cloth,* **$12.**

The completely new, Seventh Edition of the Index contains about 1,600 pages of text covering nearly 10,000 descriptions of individual substances, more than 3,300 structural formulas, and about 30,000 names of chemicals and drugs alphabetically arranged and cross-indexed. An outstanding feature of the new book is a separate and greatly expanded cross-index section of more than 30,000 names. This enables the user to locate a particular chemical description by page number, regardless of whether he knows only the generic name, brand name, or systematic chemical name of the substance.

A special section lists and describes more than 400 organic "Name" reactions with references. There are also an up-to-date periodic table, a table of international atomic weights, and almost 300 pages of appendices on such subjects as chromatographic adsorbents, calories in foods, the Russian alphabet, biological units, coal-tar colors, thermometric equivalents, antifreeze mixtures, the refractive index of liquids, saturated solutions, radioactive isotopes, and isotonic solutions.

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(Continued from page 686)

or they dry out and become irritating rather than soothing.

Lotions and liniments are useful in acute and subacute dermatitis, particularly in the presence of papular eruptions. They are useful in that they increase the evaporating surface of the skin and protect it from air and friction. The most famous are calamine lotion and liniment, usually combined with phenol.

Creams, particularly water-in-oil emulsions, are soothing, emollient, and hydrophilic, and are therefore of use in acute, subacute, and chronic itching dermatoses. They may be used alone or with added medicaments for antipruritic effects. Oil-in-water emulsions or vanishing creams have more astringent action. They can be used on moist and weeping surfaces. Since they penetrate easily, they usually do not need to be removed.

A number of bland ointments and creams, particularly those containing vitamins A, D, E, and pantothenol are claimed to exert antiprurient effects, e.g., Tashan (Hoffmann-La Roche); Vitamin A and D Ointment (White); Panthoderm (U. S. Vitamin.).

Systemic and topical drugs for the relief of pruritus have been manifold. However, in recent years several therapeutic agents have become available that may stand the acid test of clinical time. Among these are the antihistamines, which are of value in histamine-induced pruritus, and as an adjunct in other itching manifestations because of their soporific and sedative effects. The tranquilizers (for example, Temaril, S.K.&F.) function rather well in the psychoneurogenic group of pruritic dermatoses. The most effective agents have been the corticosteroids, which have a profound effect on those itching dermatoses originating from allergic and inflammatory responses.

Antihistaminic drugs have proved of definite value in the relief of the itching of atopic dermatitis. Reports vary because of the different criteria employed for evaluation. In about 60 per cent of patients, oral therapy relieves itching. As a result, scratching is discontinued and the lesions improve due to avoidance of mechanical irritation and secondary infection. In the treatment of atopic dermatitis, topical application of the antihistaminic drugs has been widely employed. This route is effective in that the local anesthetic action of the drugs contributes to the relief of the pruritus.

In the treatment of contact dermatitis, the chief effect of the antihistaminic drugs is the relief of pruritus. About 50 per cent of patients are benefited.

Miscellaneous itchings are sometimes symptomatically relieved by antihistaminic therapy whether or not they have an allergic basis. Pruritus ani, scroti, and vulvae occasionally respond to oral therapy, but more frequently to topical application. In the latter case, local anesthesia probably plays a major role.

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eyes and throat is afforded in about 80 per cent of patients.

The indiscriminate use of antihistamines in all kinds of pruritic conditions is certainly not advised. There is growing belief that their benefits in atopic dermatitis or in allergic contact dermatitis is almost entirely due to their sedative side effects, while the antipruritic action of locally applied antihistamines is due to anesthetizing properties. The topical application is attended by about 5 to 10 per cent incidence of contact dermatitis.

Topical anesthetics have been widely used. The most common are the 'caine' type (nupercaine, procaine, lidocaine, benzocain). While affording anesthesia, they are being used less frequently, due to their high incidence of senitization (10 per cent). Procaine has been used both intravenously and orally, usually mixed with ascorbic acid. About 50 per cent of patients with various types of neurogenic and miscellaneous dermatoses have experienced temporary to complete relief. Certain "noncaine" anesthetics, such as dimethisoquin (Quotane, S. K. & F.) and diperodon (Diothane, Merrell) have proved of considerable value, and are definitely less sensitizing when applied topically than are ointments containing "caine" drugs or antihistaminics. Quinine has been used as an anesthetic of long duration, and is valuable in conditions where long anesthesia is desirable, as in pruritus ani.

Special types of pruritus and itching of particular sites often require special forms of local medication. For example, itching of the legs is found in association with a varicose condition, and is often best relieved by elastic stockings, Ace bandages, or with some form of Unna's Zinc Gelatin Boot. One simple way to apply a zinc gelatin boot is to use a ready-made form (Dome Paste Bandage, Dome; Gelocast, Duke).

The tranquilizer type compounds are finding a firm place in antipruritic therapy. Probably all dermatologists will agree there is no sole cause for atopic eczema in general, or in recurrences in a single case. As to the presence of emotional factors, there is hardly ever a question but that tension is present, and modifies the course of the disease.

The first important advance in the use of ataractic agents specifically for itching was trimeprazine (Temaril, S. K. & F.). Temaril has been used in a wide variety of pruritic dermatoses. The consensus of many clinical papers published in the past three years is that about 70 per cent of patients achieve a good degree of relief. The drug does not "affect" any of the dermatoses, except to make them more amenable to routine therapy through a decrease of itching. This is particularly true of patients with atopic dermatitis. Temaril is particularly valuable in treatment of pruritus of children who are often uncooperative. The tranquilizing effect is really a therapeutic effect, and offers aid to the patient, parent and physician. Because of the antipruritic effect, the use

of other medications may frequently be reduced or eliminated. Vistaril (Pfizer), the pamoate salt of hydroxyzine, appears to afford a similar incidence of relief. The most frequently observed side effect of the tranquilizers is drowsiness, experienced by about 60 per cent of patients. This reaction is easily controlled by regulating the dosages.

Drugs such as bromides or barbiturates often control both localized and general pruritus by depressing the central nervous system. The barbiturates, however, cause a "hangover" in many cases. The ataractic agents are much preferred.

The most consistently successful antipruritic preparations ever made available for topical use are the corticosteroids. Of all prescriptions for dermatologics, between 30 and 40 per cent contain a corticosteroid. While cortisone is generally ineffective as a topical antipruritic agent, the related hydrocortisone, prednisolone, and the newer hydrogenated corticosteroid dermatives can exhibit remarkable beneficial topical action in certain dermatoses. It is now generaly accepted that hydrocortisone and related compounds are the most consistently successful antipruritic preparations—they benefit approximately 80 per cent of patients. Topically, they all afford relief in almost any pruritic dermatosis. They should not be used in generalized or extensive eruptions, because of the danger of absorption, especially with 9-alpha-fluoro hydrocortisone acetate. Although the newever prednisone, prednisolone, methyl prednisolone, triamcinolone, and dexamethasone are more potent than hydrocortisone and are used in lower dosages, topical hydrocortisone is still by far the most widely used, and considered the safest, especially in thin-skinned areas.

In patients having a pyogenic infection superimposed upon a pruritic dermatitis, corticosteroid ointments combined with antibiotics have been used effectively as topical agents. The addition of neomycin, bacitracin, and polymyxin does not appear to interfere with the antipruritic effect of the corticoid agent.

The corticosteroids have been combined with many other topical antipruritics, such as varied antiseptics, coal tar, and sulfur. The aerosol spray is attaining increasing popularity (Metiderm Spray, Schering; Cortispray (Walker), Topicort Spray (Roussel), Tarcortin Aerosol (Reed & Carnrick).

Systemic administration of ACTH or of adrenocortical steroids have their distinct sphere of usefulness in managing acute self-limited and severe cases, as well as chronic, very severe cases of itching, provided all other measures have failed. Hydrocortisone injected directly into chronic, thickened eczematous plaques or lichen planus often relieves itching.

The steroid hormones are not curative of pruritus, even as they are not curative of anything else. By providing temporary relief they afford the clinician an opportunity to institute rational and effective

(*Continued on page 694*)

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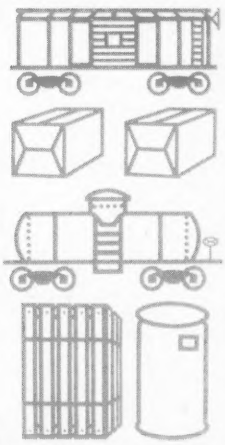

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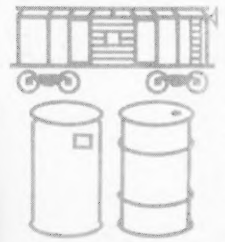

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Trade Literature

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A price catalog for essential oils, aromatic chemicals, and certified colors has been issued by Dodge & Olcott, Inc., 180 Varick St., New York City 14. The 36-page booklet, published semi-annually, includes descriptions and uses of D&O's various products.

Fritzsche Price List

Fritzsche Brothers, Inc., 76 Ninth Ave., New York City 11, has published a new wholesale price list of the company's essential oils, concentrates, absolutes, aromatic chemicals, fixatives, tinctures, resins, gums, and colors.

Vitamin E

Data Sheet No. 555, Vitamin E, has been issued by the Chemical Sales Division, Chas. Pfizer & Co., Inc., 630 Flushing Ave., Brooklyn 6, N. Y. It includes descriptions of biological activity, pharmaceutical aspects, stability, F.D.A. status, clinical studies, assay, labeling, and packaging.

Cosmetic Cream Formulary

A new formulary for cosmetic creams and lotions is available from Morningstar-Paisley, Inc., 630 W. 51st St., New York City 19. The 8-page folder contains specific formulas for 21 products, including all-purpose, cleansing, hair, hand, hormone, lubricating, moisturizing, night, and vanishing creams. All formulas incorporate absorption bases, and the modern oil-in-water and water-in-oil emulsions.

Unlabeled Poisons

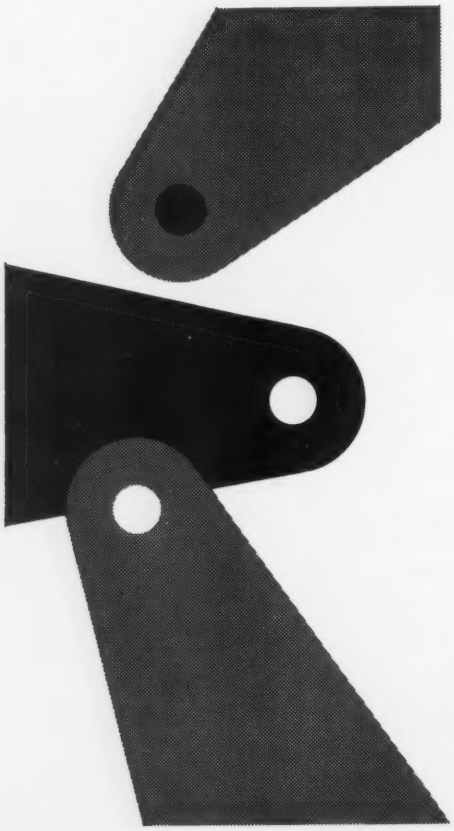
Hidden Hazards—the Unlabeled Poison Problem, is the title of a brochure published by the American Medical Association, 535 North Dearborn St., Chicago 10, Ill. It presents the poison problem in the U. S. and tells what the A.M.A. would have done to solve it. Principles for precautionary labeling of hazardous chemicals, and a copy of the proposed bill, H.R.7352, the Uniform Hazardous Substances Act, which was introduced in May 1959, are included.

Pressurized Packaging

A 28-page booklet, The Magic of Aerosols, has been issued by Continental Can Company, 100 East 42nd St., New York City 17. It traces aerosol history and growth, markets and products, container availability, and industry services. A list of contract fillers by states is included.

Biological Research

Hazelton Laboratories Inc., P.O. Box 30, Falls Church, Va., has made available a 16-page brochure describing its broad, scientific approach to biological and chemical research in the evaluation of new chemical products. Services available, types of research, the laboratories' special facilities, instrumentation, and scientific staff are described. A partial listing of Hazelton's clients is included.



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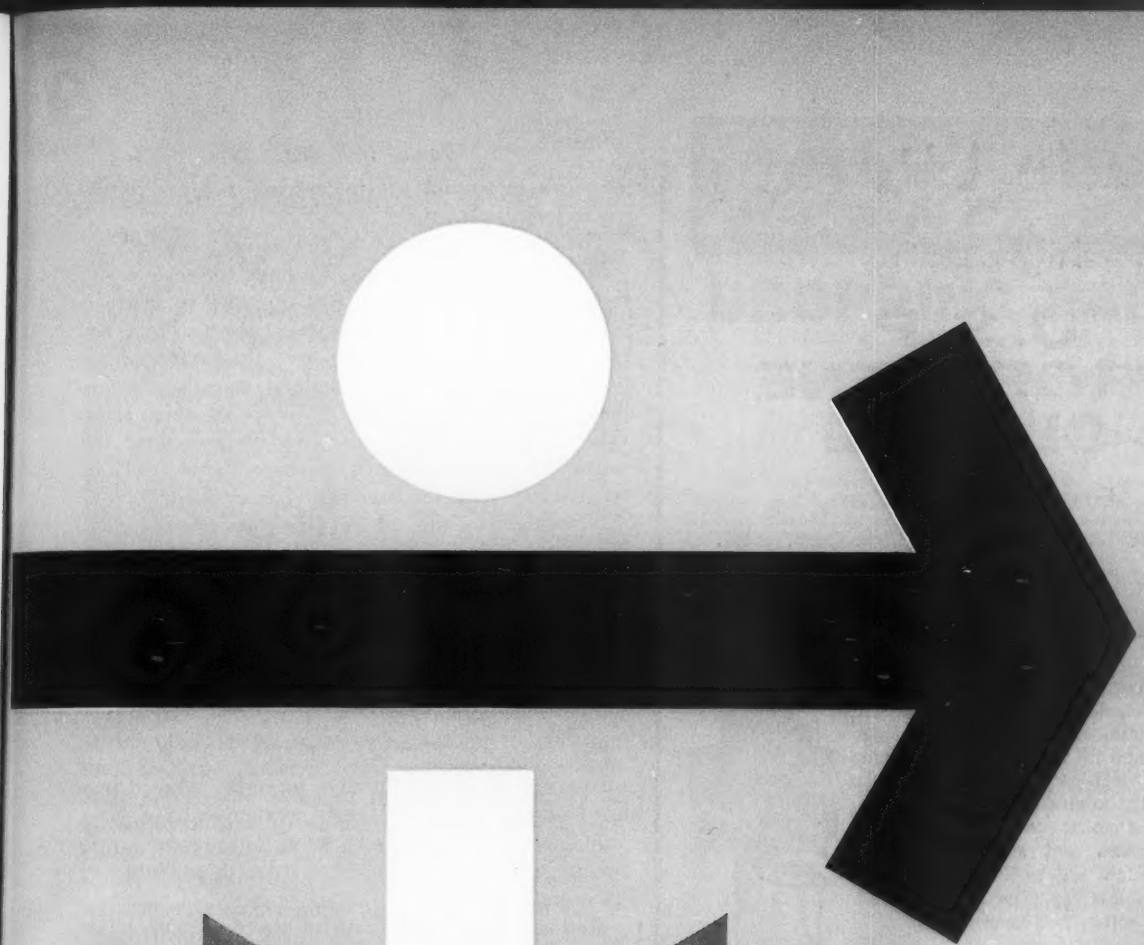

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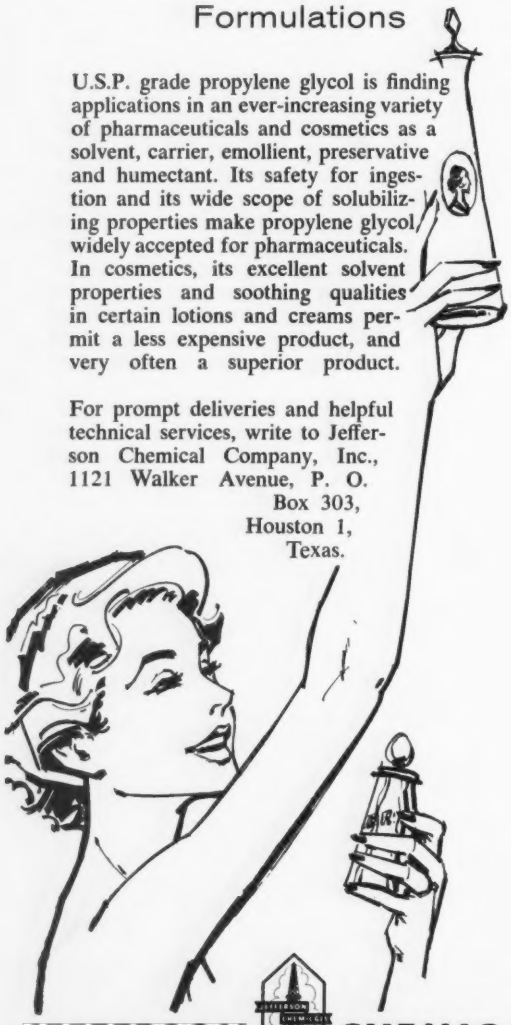

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measures to control the underlying and precipitating factors in pruritus.

The contraindications to the topical use of the corticosteroids are minimal. To date, the only corticosteroid absorbed in sufficient quantity to produce systemic harm is fluorohydrocortisone, which occasionally has been shown to cause fluid retention on topical application. A secondary consideration is that oral cortisone preparations are of such great value that some clinicians give up searching for causes when the patients improve. This leads to recurrences after the medication is stopped.

Newer entries are the enzyme-corticosteroid combinations such as Chymar Ointment (Armour), which have double antiinflammatory activity, with claims of relieving itching of numerous dermatoses.

THE SCIENTIST'S STAKE

(*Continued from page 609*)

memories are short. We have forgotten what it was like before the advent of the drugs we now have. Who would want to turn his back on our present armamentarium and rely solely on the therapeutics of 25 years ago?

Let us look at the record of the American pharmaceutical industry during this short space of 25 years. What are some of the achievements which have originated largely in its own laboratories? No one can deny the contributions of the industry in the field of the vitamins. It was largely through its research and development that a number of the vitamins were isolated and characterized and that economical production of most of the important ones originated in this country. From these same laboratories came also such important therapeutic agents as Benadryl, the first antihistaminic available to the general practitioner; the first uricosuric agent, Benemid, for the treatment of gout; cortisone and its analogues, for the treatment of rheumatoid arthritis, and a host of other diseases; Diamox, the first carbonic anhydrase inhibitor of medical importance; Diuril and its analogues for the control of edemas, heart failure, and hypertension; the broad-spectrum antibiotics, Chloromycetin and the family of tetracyclines; the antibiotics erythromycin and novobiocin; pyrazinamide and isonicotinyl hydrazide for the treatment of tuberculosis; the less toxic and more versatile sulfa drugs; Nilevar, the first oral anabolic agent; meprobamate and Librium for mental health; and drugs such as Cogentin for the control of Parkinsonian syndrome. This is only a partial list, and is only one part of the record for the past 25 years.

Distinguished Collaboration

The second part of the industry's record is derived from the collaboration between the scientists of our

laboratories and those of the universities, institutes, and hospitals. We at Merck are proud of our collaborations with outside investigators, since six of them have later become Nobel Laureates. Now what has this collaboration between the academic and industrial scientists meant? Streptomycin might have remained a laboratory curiosity or its availability as a drug may have been delayed a number of years had not Dr. Waksman sought the collaboration of research and development in the pharmaceutical industry. Insulin in a form suitable for the treatment of diabetics resulted from a collaboration between the Lilly research staff and the discoverers of insulin—Banting, McLeod, Best, and Collip. From such collaborations have also come the female sex hormone, estrone; such vitamins as B_1 and pantothenic acid; Dilantin for epilepsy, Nystatin for fungal infections; the thiouracils for hyperthyroidism and Nalline for the diagnosis of morphine addition and morphine poisoning.

It is in this area—the collaboration area—that our critics often forget industry's paramount contribution. In some of these collaborations, our contributions are clearly research in nature; in others developmental, and still others a combination of both. Unless an organization pursues the development of a new therapeutic agent, the agent is worthless. Unless the physician has the agent available to him in effective dosage forms and useful formulations, his patients must do without it. Until the industry learned how to make an injectible form of vitamin K_1 Dicumarol therapy, a lifesaving method in many instances of coronary thrombosis, was too hazardous for widespread use.

The ability to collaborate and move quickly in research and in development is a priceless attribute of the industry, for one can't put a price on the urgency of saving lives or combating illness and relieving pain. Penicillin, discovered by the British, undoubtedly would have been delayed for the whole of World War II, had not the American pharmaceutical industry applied its research and development resources when it did. The great rapidity with which Salk's polio vaccine and the Asiatic flu vaccine were made available to physicians can only be measured in terms of people saved.

Someone Else's Test Tube

It is senseless for anyone to charge that laboratory discoveries alone constitute the reason for the existence of research, and to say that scientists who carry a discovery from someone else's test tube to a useful drug have contributed nothing. Is it correct to say that the German physicists who demonstrated nuclear fission in the Thirties should receive the credit for atomic energy? Certainly, everyone recognizes the contributions of those who worked on the Manhattan project. As a matter of fact, the names we best remember in connection with the atomic

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project are Fermi and Oppenheimer, and not Meitner, Hahn, and Strassman.

The pharmaceutical industry today is characterized by the tremendous influx of new drugs and by an obsolescence of the older ones. As a matter of fact, we have been criticized for this. Why does this constant change of drugs occur? The answer is the intense activity that exists in the research organizations of the pharmaceutical companies. We think of this as competition, but actually the motive is the intense desire to produce a better drug. There is no drug in existence that is completely satisfactory—that cannot be improved upon from the standpoint of effectiveness, reliability, or toxicity. Even penicillin, considered at one time an almost ideal drug, has its failings. Some patients cannot tolerate it because of the dangers from anaphylactic shock. Some physicians are expressing alarm at the growing number of fatalities resulting from infections of penicillin-resistant staphylococci. The need for improved antibiotics is obviously imperative. The need for improved drugs in other fields of therapy is just as important. This is why during the past ten years so many newer drugs have appeared in the fields of steroid therapy, hypertension, mental and cardiovascular diseases. You may expect that still more drugs will appear as even better ones are discovered.

A Dedication to Science

I speak in the name of scores of thousands of research chemists who have made a career in industry. We have made this our career for many reasons beyond the need for a means of livelihood—a dedication to science, a desire to create and, not least of all, a desire to contribute something of importance to our way of life.

I think this is true in every field of chemical research, whether it be research in heavy chemicals, petroleum, steel, coal, food chemistry, or the pharmaceutical industry. The feelings of creating and contributing are important factors in the morale, enthusiasm, and dedication we bring to our every-day performance of our jobs. Factors such as these spell the difference betwen inspired work and just doing a job.

If, as Mr. Kefauver and a number of the drug experts who spoke critically of our accomplishments would have us believe, the result of the tremendous research and development efforts which have gone into the pharmaceutical field has been to defraud the public, to swell the coffers of the companies, and to exact merciless tribute from the infirm and the aged, it is a sad commentary on the meaning of the thousands of man-years of dedicated effort by thousands of chemists, engineers, biologists, and physicians throughout this country.

An Irresponsible Indictment

Irresponsible attacks on the motives and ethics of

scientists can be irretrievably appalling to their morale. Irresponsible indictment of the best efforts of such an important segment of our scientific and technological manpower can have serious consequences in decreasing the sources of scientific manpower and on the youth of our country who see an expression of their idealism in the accomplishments of chemistry, biology, and medicine during the past 25 years. Toward these dangers, our critics must take a responsible attitude. Those who have gone to such lengths to degrade the medical accomplishments of the American pharmaceutical industry must be made to realize the extent of the damage they cause and be willing to take the responsibility for it.

I can't believe that some of our scientific critics at the Washington hearings really meant what they said. I question whether the views they expressed represent their over-all assessment of research in the drug industry. Could it be that they failed to appreciate the seriousness of giving their views in such a preemptory manner, not reflecting sufficiently on the importance of adequate perspective when expressing their views in the public spotlight?

PATENT THOUGHTS

(Continued from page 639)

engineers are more likely to make mechanical inventions in this area than are perfumers, the latter may, nevertheless, make contributions along these lines too.

Patent Dangers

We have thus far considered cases where perfumers may be helped by patents if used properly. We must also consider an area where perfumers, if they are not alert, may be hurt by patents. Reference is made to liability for patent infringement. Ignorance of the existence of any patent does not excuse its infringement; so an ostrich-like attitude is no help.

Patent infringement may occur in many ways. Some follow:

1. Using a patented product not purchased from the patent owner or a licensee.

2. Making a patented product without license from the patent owner.

3. Advising a customer to employ a patented product, process, piece of equipment or container, without license. This is believed to be a potentially great area of liability and it is ironical that it can result simply out of the desire of the perfumer to do a complete job by giving the customer the benefit of all the perfumer's knowledge. Then too, with the U.S. perfumer's expanding interests into the industrial products field, the risk here is becoming greater. It is not enough to say that careful companies always point out that the suggestions they are making for their customers are not to be taken as guarantee that there

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* *The Dispensatory of the United States of America, 1950 Edition*

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is no potential liability, because the customer, if he is sued for following your advice, is lost to you.

Patent consequences of a perfumer's activities should therefore be considered. There is such a variety of problems and organizations employing perfumers that no hard and fast guides can be given. A few general observations can be made. One is to advise customers to obtain patent guarantees from their suppliers in all cases where a patent situation may exist. Another is to make a patent survey before embarking on any new area of business. Merely assuming that because others are doing the same thing it is permissible for you as well could be dangerous. Following the unfolding patent literature in all related fields also should be part of the perfumer's tasks. It goes without saying that close collaboration with patent counsel should always be had in those cases where such counsel is available.

What Does the Future Hold?

This is entirely in your hands. There are indications that the American perfumers are coming out of their shells more and more. Again, this very organization is strong evidence of that. If the reader is inclined to pass off the foregoing as involving too much of a change, just let him reflect on a few changes which already have occurred in the attitudes of perfumers. All take the synthetic aromatic industry for granted today; yet, J. S. Jellinek, in his *The Practice of Modern Perfumery*, has pointed out that it has not been too long ago since perfumers would use only natural products. Indeed, Jellinek notes that "only yesterday" many aromatics like hydroxycitronellal and α-amyl-cinnamic aldehyde were regarded by the perfumer as useless. It seems possible, therefore, that in the not-too-distant future the perfumer of tomorrow will really begin to utilize the American patent system to his own benefit.

RECENT PATENTS

2,927,883 — Am. Cyanamid — N-Trichloromethylthio-Benzotrizole

2,927,884—Wisconsin A.R.F.—Treatment of Ketosis with ACTH and Aspirin

2,927,899—Lever Bros.—Detergent Germicidal Compositions Containing A Thiuram Sulfide

2,927,901—E.J.F. Charret (France)—Hair Cleanser

2,927,924—Eli Lilly—Phenethyl-Substituted Piperazines

2,927,925 — Abbott Labs. — Diphenyl Propionic Acid Esters

2,927,926—E. Merck (Germany)—Sulfur Containing Derivs. of Isonicotinic Acid Hydrazide

2,927,933—Upjohn—17α-Alkytestosterones

2,928,767—Smith, Kline & French Labs.—Stabilized Phenothiazine Preparations

2,928,768—U.S. Vitamin & Pharm. Corp.—Use of Substituted Amino-Formoguanamines in Diuretic Therapy

(*Continued on page 707*)

COMING EVENTS . . . . .

MAY

15-18 **Proprietary Assn.**, annual meeting, The Greenbrier, White Sulphur Springs, West Va. (Dr. Howard A. Prentice, 810 18th Street, N.W., Washington 6, D. C.)

16-17 **Chemical Market Research Assn.**, annual meeting, Hotel Baltimore, N. Y. C.

16-18 **Chemical Specialties Manufacturers Assn.**, mid-year meeting, Drake Hotel, Chicago, Ill. (C.S.M.A., 50 E. 41st St., N.Y.C 17)

18 **American Society of Perfumers**, open meeting, Advertising Club, N. Y. C. (Dorothy A. Douglass, A.S.P., 630 Fifth Ave., N. Y. C. 20)

19 **Cosmetic Industry Buyers & Suppliers Assn.**, luncheon meeting, Savoy Hilton, N. Y. C. (Frank N. Pond, Dominion Products, Inc., 10-40 44th Drive, Long Island City 1, N. Y.)

19-20 **Pharmaceutical Manufacturers Assn.**, Production and Engineering Section, The Broadmoor, Colorado Springs, Colo. (Dr. Carl Bambach, P.M.A., 1411 K Street, Washington 5, D. C.)

23 **Society of Pharmacists in Industry**, dinner and evening meeting, New York Academy of Sciences, New York City (Vincent DeFeo, Dodge & Olcott, Inc., 180 Varick St., N. Y. C. 14)

25-27 **Glass Container Manufacturers Institute**, annual membership meeting, The Greenbrier, White Sulphur Springs, W. Va. (Victor L. Hall, G.C.M.I., 99 Park Ave., N. Y. C. 16)

JUNE

1-3 **Instrument Society of America**, annual instrumental methods of analysis symposium, Montreal, Quebec.

4 **Foragers of America**, annual outing, Reinhard's Outing Resort, Bayville, L. I.

6-8 **American Material Handling Society**, New England show, Commonwealth Armory, Boston, Mass.

8-10 **Society for Analytical Chemistry and Gas Chromatography**, symposium on gas chromatography, Assembly Rooms, Edinburgh, Scotland

9 **Cosmetic Industry Buyers & Suppliers Assn.**, ladies day luncheon, New Ballroom, Hotel Pierre, N. Y. C. (Frank N. Pond—see above)

9-11 **Manufacturing Chemists Assn.**, annual meeting, Greenbrier Hotel, White Sulphur Springs, West Va.

9-12 **American Therapeutic Society**, Barcelona Hotel, Miami Beach, Fla.

11-12 **American Diabetes Assn.**, Hotel Deanville, Miami Beach, Fla.

12-15 **Extension Services in Pharmacy**, annual national industrial pharmaceutical research conference (stabilization and stability testing of pharmaceuticals), King's Gateway. Land O' Lakes, Wisc. (Richard S. Strommen, E.S.P., Univ. of Wisconsin, Madison, Wisc.)

12-17 **Pharmaceutical Society of the State of New York**, annual convention, Saranac Inn, Upper Saranac Lake, N. Y.

13-15 **Chemical Institute of Canada**, annual conference and exhibition, Ottawa, Canada

13-15 **1960 Microscopy Symposium**, Del Prado Hotel, Chicago, Ill. (Walter C. McCrone Associates, sponsors)

13-17 **Gordon Research Conferences**, lipide metabolism, Kimball Union Academy, Meriden, N. H.

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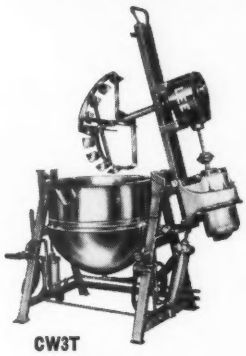

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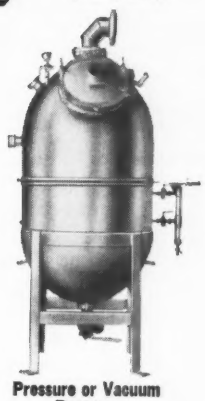

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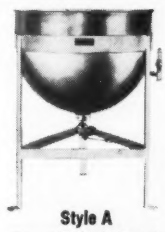

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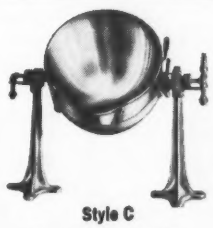

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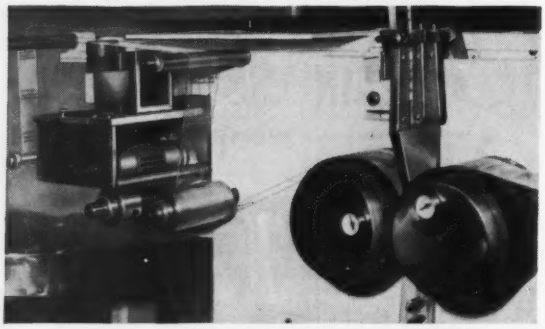

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JUNE *(Continued)*

13-17 **American Medical Assn.**, annual meeting, Miami Beach, Fla.

13-17 **Pharmaceutical Advertising Club**, annual P.A.C.-M.P.A.C. joint meeting.

14 **Society of Cosmetic Chemists, Chicago Chapter**, Chicago, Ill. (Lura S. Ricketts, S.C.C., Chicago Chapter, Chicago, Ill.)

16-17 **National Colloid Symposium**, A.C.S. Division of Colloid Chemistry, University Center, Lehigh University, Bethlehem, Penna.

19-22 **American Institute of Chemical Engineers**, Del Prado Hotel, Mexico City, Mexico

20-24 **Gordon Research Conferences**, cell structure and metabolism-secretion, Kimball Union Academy, Meriden, N. H.

24 **Parenteral Drug Assn.**, scientific meeting, Edgewater Beach Hotel, Chicago, Ill. (P.D.A., 1420 Snyder Ave., Phila. 45, Penna.)

27-30 **Toilet Goods Assn.**, annual convention, Poland Springs House, Poland Springs, Maine. (Kathryn Fitzpatrick, Americas Bldg., Rockefeller Center, N. Y. C. 20)

27 **Gordon Research Conferences**, proteins and nucleic acids (through July 1), New Hampshire School, New Hampton, N. H.

28 **Oil Trades Assn. of New York**, golf outing, Siwanoy Country Club, Bronxville, N. Y.

JULY

3-9 **American Assn. Colleges of Pharmacy**, annual convention, College of Pharmacy, University of Colorado, Boulder, Colo.

4-9 **Society of Chemical Industry**, annual general meeting, Bristol, England

11-15 **Gordon Research Conferences**, chemistry, physiology, and structure of bones and teeth, Kimball Union Academy, Meriden, N. H.

19-21 **Western Packaging & Materials Handling Exposition**, Pan Pacific Auditorium, Los Angeles, Calif. (Western Packaging Exposition, Clapp & Poliak, Inc., 341 Madison Ave., N. Y. C. 17)

AUGUST

1-5 **Gordon Research Conferences**, instrumentation, Colby Junior College, New London, N. H.

1-5 **Gordon Research Conferences**, steroids and other natural products, New Hampton School, New Hampton, N. H.

8-12 **Gordon Research Conferences**, food and nutrition, Colby Junior College, New London, N. H.

14-19 **International Congress of Clinical Chemistry**, Edinburgh, Scotland

14-20 **American Pharmaceutical Assn.**, annual convention, Shoreham-Sheraton Park, Washington, D. C.

15-19 **American Veterinary Medical Assn.**, national meeting, Denver, Colo. (Brian M. Foster, A.V.M.A., 600 So. Michigan Ave., Chicago 5, Ill.)

15-19 **Gordon Research Conferences**, medicinal chemistry, Colby Junior College, New London, N. H.

15-19 **Gordon Research Conferences**, analytical chemistry, New Hampton School, New Hampton, N. H.

15-19 **Gordon Research Conferences**, toxicology and safety evaluations, Kimball Union Academy, Meriden, N. H.

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		SPACE	RESIDUAL	MOTH PROOFERS																					
1946	3.5	0	0	0	3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.5
1947	3.0	1.3	0	0	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.3
1948	2.0	5.0	*	*	7.4	2.0	0	0	0	0	0	2.0	0	0	0	0	0	0	0	0	0.5	0	0	0	9.9
1949	1.6	12.0	*	*	13.6+	3.5	0	0	0	0	*	3.5+	0	*	0	*	*	*	*	1.0	0	*	*	19.5
1950	1.3	18.0	*	*	19.3+	5.0	0	0	0	0	*	5.0+	1.0	0.4	0	*	*	*	*	1.4+	1.5	0	*	*	30.0
1951	1.0	20.0	1.0	0.8	22.8	9.0	0	3.3	0	0	*	12.3+	1.0	1.7	0	*	*	*	*	2.7+	3.0	0	*	*	43.0
1952	0.9	31.8	1.7	2.0	36.4	12.7	0	8.4	0	0	3.1	24.2	17.1	6.1	0	*	*	*	2.8	26.0+	6.8	0.1	4.8	4.9	99.0
1953	0.7	38.0	4.5	3.8	47.0	17.3	*	8.9	0	0	2.3	28.5	27.3	16.1	0	0.8	0.1	0.4	3.4	48.1	13.0	0.3	3.1	3.4	140.0
1954	0.5	33.4	6.7	6.4	47.0	21.3	0.2	7.1	0	0	2.9	31.5	47.0	34.5	0	1.1	3.0	0.4	4.0	90.0	13.1	0.5	5.9	6.4	188.0
1955	0.3	39.7	8.3	8.7	57.0	33.1	2.0	6.8	0	*	6.2	48.1	53.1	55.8	0	1.5	7.0	0.5	6.7	124.6	14.7	1.0	10.3	11.3	255.7
1956	*	44.1	10.6	6.7	61.4	38.4	2.8	8.9	8.0	1.5	13.6	73.2	51.0	83.4	0	2.4	8.8	0.4	7.3	153.3	22.5	1.5	13.3	14.8	325.2
1957	*	31.7	11.8	7.2	50.7	44.6	2.4	9.0	11.2	4.3	5.9	77.4	59.3	95.6	0	6.2	18.6	0.6	6.5	186.8	43.0	2.3	15.0	17.3	375.2
1958	*	37.2	28.0	6.1	71.3	62.8	3.7	9.8	6.6	7.7	7.9	98.5	65.0	112.1	23.0	8.1	30.0	0.7	8.9	247.8	50.0	3.3	14.3	17.6	485.2
1959	*	39.6	38.9	6.7	85.2	70.5	4.4	10.2	7.7	10.7	10.2	113.7	72.6	130.9	20.0	9.5	38.5	0.8	9.9	282.2	56.3			20.4	557.8
1960	*	39.3	40.9	7.5	87.7	78.1	4.8	10.7	8.7	12.5	12.2	127.0	76.7	146.7	28.0	10.9	44.4	1.0	11.1	318.8	63.1			22.9	619.5
1961	*	39.4	43.7	8.2	91.3	84.6	5.2	11.2	9.8	13.8	14.7	139.3	79.7	158.5	32.0	12.3	49.0	1.3	12.2	345.0	69.9			25.5	671.0
1962	*	39.7	45.2	8.8	93.7	90.3	5.4	11.7	11.1	14.9	17.6	151.0	84.0	170.8	36.0	13.8	52.6	1.6	13.7	372.5	74.4			29.0	720.6
1963	*	39.6	47.0	9.5	96.1	95.8	5.6	12.1	12.6	15.8	20.7	162.6	86.8	179.8	40.0	15.8	56.3	2.0	15.5	396.2	81.1			33.6	769.6
1964	*	39.7	48.5	10.1	98.3	100.9	5.6	12.5	14.0	16.8	23.6	173.4	89.1	188.0	44.0	17.8	59.8	2.5	18.0	419.2	86.8			38.5	816.2
1965	*	39.9	50.1	10.9	100.9	104.2	5.8	12.8	15.7	17.5	27.3	183.3	90.7	194.8	49.0	20.7	62.1	3.0	20.8	441.1	93.4			42.5	861.2
1966	*	40.1	51.4	11.7	103.2	108.2	5.9	13.3	17.6	18.3	31.3	194.6	92.9	201.0	53.0	23.7	65.1	3.5	24.2	463.4	98.9			50.0	910.1
1967	*	40.1	52.8	12.3	105.2	110.8	5.9	13.4	19.5	18.9	35.2	203.7	94.4	202.0	57.0	27.7	68.2	4.0	28.5	481.8	104.3			56.4	951.4
1968	*	40.5	53.9	13.0	107.4	113.3	6.0	13.7	21.3	19.6	39.3	213.2	95.2	206.0	61.0	33.3	70.6	4.6	32.5	503.2	110.8			63.6	998.2

*Less than 500,000 units.

OTHER HOUSEHOLD PRODUCTS include cleaners of all types, such as glass, metal, oven, rug and upholstery - except glass in 1956 and after: waxes, water repellents, insect repellents, shoe dressings, etc. - except insect repellents (see residual insecticides) and shoe dressings in 1956 and after.

OTHER PERSONAL PRODUCTS include shampoos, personal deodorants, hand lotions, powders, depilatories, etc.

MISCELLANEOUS PRODUCTS include ignition sprays, antistatic sprays, industrial applications, etc.

(Continued from page 625)

tection; and the blind orifice, which prevents seepage and tampering and can be pierced with the pointed tip of the cap.

Until 1949, the tube industry had been using caps of various phenolics and ureas with resultant minor problems of leakage. However, in that year Peerless pioneered the use of polyethylene caps, the elastomeric and shrinkage qualities of which make the plastic literally "hug" the neck of the tube. This completely obviates the problem of cap loosenings in transit. Now in general use, these caps are too heavy to be permeable, and most are designed to withstand the heat of waxing machines.

Until about 15 years ago, the tube industry generally used oleo-based enamels for coating; the whites of these were stable for several months, then they yellowed. New enamels, vinyls, alkyds, combinations, and epon-based coatings replaced these when their heat and drying cycles had been modified. The covering power has been greatly improved, adhesion is excellent, whites stay white, and many coatings will withstand steam sterilization.

Outside clear-lacquer coatings, moreover, may often be omitted now, due to the vast improvements in printing inks and lithographic plates, made with such precision in the last few years that the print is extremely sharp and clear. Lithographic colors range from one to four over the base coat. Most companies with long marketing experience, however, keep their designs simple and in not more than two to three colors. Printing has also had a bearing on tube shapes; it is much easier to print on cylindrical shapes. Also wall and shoulder uniformity are much greater in a round tube, and a conventional tube is stronger than an oddly shaped one, such as oval or square tubes.

Aluminum is now by far the most popular material for tubes. Its use rose sharply from 5 per cent of all tube consumption by content in 1945 to 58.83 per cent in 1957. By poundage, lead still leads. Last year, the total of 25,771,985 pounds of metal used to produce tubes included 14,373,825 pounds of lead, 9,891,168 of aluminum, and 1,506,992 of tin. Because aluminum is light, approximately one-fifth the weight of lead, for instance, the unit volume figures were far different. Last year, the tube industry produced these volumes: tin, 965,825 gross units; tin-coated, 122,747; lead, 1,797,166; tin-lead alloy, 102,688; and aluminum, 4,997,781.

End uses of tubes have remained fairly constant in the last few years. Drugs and cosmetics have both enlarged their share of total production. Comparing 1959 industry production by unit volume over 1958 (not a "true" growth trend since production in the recession year of 1958 dropped below 1957), we find these increases by product categories: 1,150,013,808 total tubes in 1959 over the total of 1,004,947,488 for 1958, versus 1,089,838,656 total for 1957; cosmetics in 1959 accounted for 104,187,024 against

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78,069,024 in 1958; medical and pharmaceutical was 248,695,344 over the 1958 total of 203,665,248; dentifrices accounted for 581,168,592 in 1959 versus 512,863,632 in 1958; and household and industrial products used 176,197,968 against 166,299,840 in 1958. Shaving cream has had a three-year drop because of increased use of electric razors and inroads by other packages, notably the metal aerosols: 45,219,744 tube units in 1957, 43,406,352 in 1958, and 39,146,544 in 1959. Tubes for foods, common in Europe, have increased only slightly, now accounting for 0.05 per cent of production; future easing of FDA regulations might well increase this market for mustard, jellies, and the like.

As to future growth, we believe that tube production will generally increase with the population growth and, as production becomes more automated, we foresee a trend more and more to aluminum tubes (the entire industry is converted to Carboloy tools and dies for extruding the tougher aluminum), and an increase beyond that of population growth for medical and pharmaceutical needs in keeping with greater emphasis on preventive versus curative medicines. Increasing communications to rural areas and interest in dental care should also push up dentifrice volume over natural population growth. Growth of tubes for cosmetics, now accounting for 9 per cent of industry production, is almost impossible to gauge, but we believe the fastest growing package for cosmetics, and for many other products, is the aerosol.

Historically, probably the first person to attempt to develop an aerosol was Edmund Rogers, now president of the Roner Corporation. Charles L. Gebauer, president of Gebauer Chemical Company, pioneered a glass aerosol dispenser using low-pressure fluorinated hydrocarbons as a propellant in the early Nineteen Thirties. After additional research by scientists in the U. S. Department of Agriculture, aerosols were no longer a novelty, and, during World War II, over 40,000,000 high-pressure steel aerosol insecticides known as "bug bombs" were produced for the armed forces. First production of low-pressure cans commenced in 1947, followed the next year by the first aerosol room deodorant, first aerosol lacquer, and first aerosol moth proofer. The first aerosol hair spray arrived in 1949; the first aerosol shave lather appeared in 1950. The nonfood aerosol was off and running. From a total volume, all materials, of 3,500,000 units in 1946, it increased to 30,000,000 units in 1950, to an estimated 620,000,000 units this year.

The lighter steel and tinplate low-pressure aerosols began to give way to aluminum, and the container sizes began to diminish as the cosmetic and pharmaceutical industries became interested in aerosols for specialty products. The first aluminum containers were cemented on both side and bottom, which, along with faultiness of early valves, contributed to leakage problems. Propellant problems notwithstanding, the two major can manufacturers, Continental and American, entered the food field a few years

ago with whipped cream aerosols, later with barbecue sauce. This summer, a seamless aluminum aerosol with cemented bottom will be available for products requiring larger containers.

Peerless entered the four ounces and under field in 1956 with extruded, seamless, one-piece aluminum containers which have been particularly successful for cosmetics, shaving lather, room deodorants, and, increasingly, drugs.

These containers, of which a half-ounce size is the smallest, are lithographed in from one to four colors over a base coat, and can be coated with a highly resistant lacquer for protection against alkalies and acids. Epoxy and other resins are used as liners.

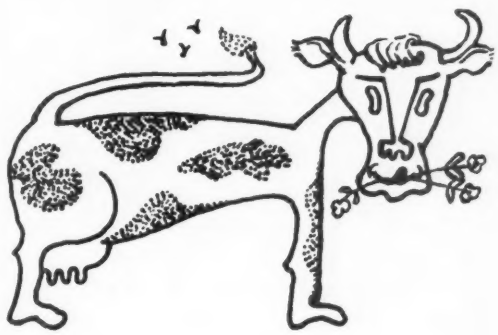
Precise valve cup fit is assured by the one-piece single extrusion process and also by a patented beaded neck that curls inward to hug the valve. After much engineering research and substantial capital investment, we have just installed the first automatic production line for these containers, increasing possible two-shift volume from 30,000 to 50,000 units, while effecting labor economies.

Two new products packaged in these containers well exemplify their possibilities. One is a set of 3.75-ounce containers for the first aerosol cold wave and neutralizer to be produced. These are being marketed to professional hairdressers, will cut hairdressing time required by about one-third, require a unique semi-fluorinated hydrocarbon propellant to be compatible, and contain an ammonia-less waving base to cut usual objectionable odor.

A second new product example shows versatility and good merchandising technique. The aluminum aerosols, in two-ounce sizes, are being used by Rexall Drug Company for its new self-selling counter display of Travel Mates. The nine products in this line are toothpaste, deodorant, hair spray, burn spray, shaving cream, suntan lotion, suntan cream, insect repellant, and foot medication.

In total gross sales, the market for room deodorants, shaving cream, and colognes in aerosols has risen rapidly, to the decline of nonaerosol packaging in recent years, while aerosol insecticides have risen slowly and nonaerosol insecticides have remained level.

In the three big growth areas, metal aerosols—particularly those six ounces and smaller—have overwhelming preference: shaving lather in metal aerosols had a reported annual industry volume, according to surveys by the Chemical Specialties Manufacturers Association, of 16,682,000 units in 1952, in 1958 accounted for 45,313,000 units; hair sprays rose from 15,120,000 units (6,918,000 in smaller sizes) in 1953 to 92,593,000 in 1958 (53,038,000 in smaller sizes); room deodorants were reported at 7,286,000 in 1951 (3,760,000 in smaller sizes) compared to 1958's 49,780,000 (35,800,000 in smaller sizes). Drugs and pharmaceuticals started later than these other products but show great growth possibilities. In



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1953, metal aerosols had a volume in this area of 831,000; in 1958, of 7,129,000.

The du Pont Company's Freon Products Division has made these estimates for aerosol production, all types of containers included, by 1968: room deodorants, 113,300,000; shaving lather, 95,200,000; hair sprays and dressings (those for men may switch to aerosols) 206,000,000; medicinals and pharmaceuticals, 33,300,000; and colognes and perfumes, 70,600,000.

Of particular interest to cologne and perfume packagers is a recent refinement in metered valves so they can now measure up to 500 equal applications from a one-ounce container.

Today, there are well over 100 different types of products being packaged in aerosols, and many of these aerosol applications, as in the case of the aerosol permanent wave, have created entirely new products, a point that many packagers would be wise to keep in mind, even those of hard, flaky products such as chemicals. The diversity of unusual products now packaged in the aerosol container, still in its infancy, would also seem to indicate the striking growth potential of aerosols. A sampling of these products includes: surgical dressing; breath freshener; bird, cat, rabbit, shark, and snake repellants; diaper freshener; dust repellant and various cleaners; plant fungicides; flameproofers for Christmas trees; girdle spray for ease in dressing; glass-frosting spray, hosiery spray to prevent runs; incense; oven cleaners; pink-eye treatment for animals; an auto deodorant for imparting new-car odor to old cars; car tire inflator; and rubber rejuvenator.

The list goes on and on, keeping pace with advancements in containers and their interior and exterior coatings, and in propellants and valves.

DRUG AND COSMETIC OPERATIONS

(*Continued from page 607*)

Shulton, Inc. sales in 1959 were 17 per cent greater than in the preceding year while earnings increased by 10 per cent. Tecnique, Inc., manufacturing hair colorings, was acquired during the year and better sales in the Toiletries Division were achieved by improved distribution and the introduction of several new products.

Smith Kline & French Laboratories earnings increased by 20.2 per cent, while sales increased by 8.7 per cent. The company is spending $6.0 million this year for capital expansion in this country and abroad. In 1959, slightly more than half of consolidated sales were tranquilizers and central nervous stimulants. Research and development expense was $12.1 million in 1959, with $13.5 million budgeted for 1960. Research personnel number 760, detail men about 450. For the first quarter of 1960, sales were 10.2 per

cent greater than in the same quarter of 1958, but profits decreased by 3.2 per cent.

Sterling Drug Inc. recorded the best year in its history in 1959; net sales increased by 5.8 per cent, while earnings increased by almost 10 per cent. Proprietaries increased from $96.8 million to $103.7 million, while pharmaceutical specialty sales increased from $71.0 million to $77.0 million.

Vick Chemical Co. ethical and veterinary drug sales were up 9 per cent to $48.6 million; proprietary drug sales increased 18 per cent to $50.3 million. During 1958-59, Vick acquired three new companies —Walker Laboratories, The Lavoris Company, and Milton Antiseptic, Ltd.

Warner-Lambert Pharmaceutical Company sales included $82.5 million of domestic ethicals and proprietaries and $31.9 million foreign ethical and proprietaries and $21.9 million of domestic toiletries and cosmetic sales and $15.7 million foreign toiletries and cosmetic sales. Spheres of research occupying the Warner-Lambert Research Institute include anti-infectious agents, mental diseases, cardiovascular diseases, anti-inflammatory drugs, and gastro-intestinal research.

The Upjohn Company current building program involves capital expenditures of $33.0 million for 1959-1960. Research expenses were $15.2 million, 9.7 per cent of sales, compared with $13.0 million in 1958. Antibiotics accounted for 20 per cent of total sales, steroid hormones for 25 per cent, nutritional products 18 per cent, other pharmaceuticals 30 per cent, and veterinary, agricultural and bulk chemical sales accounted for the remaining 7 per cent.

RECENT PATENTS

(Continued from page 698)

2,928,769 }—Strong, Cobb & Co.—Production of Con-
2,928,771 }trolled Release Medicaments

2,928,770—F. M. Bardani—Sustained Action Pill

2,928,772—Colgate-Palmolive—Hair Conditioning Composition Containing Pyridinium Chloride Substance Anionic Detergent

2,928,829—Ciba—Alkyleneimino Lower Alkyl Guanidines

PITFALLS IN PERFUMERY

(Continued from page 613)

Pitfalls in Distorted Test Conditions

The human mind that creates perfumes or perfumed cosmetics also thinks up the methods for testing their safety in practical use. Undoubtedly, it thereby also creates pitfalls in perfumery, in their application. For instance, the prominent closed patch

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test cannot be applied in the testing laboratory without gross distortion of the conditions under which perfumes or perfumed cosmetics are applied in real use: topical application of perfumes or perfumed items always allows undisturbed evaporation of the volatile fragrance materials into the open air. In fact, as everybody knows, scent perception is only possible through this phenomenon of volatility and dissipation of the fragrant molecules present in perfume compounds, as well as on the accelerated and continuous vaporization brought about by contact with the body heat. These physical phenomena prevailing under normal conditions of use, unfortunately, become adversely distorted in the closed patch test used on perfumes or perfumed materials for scented cosmetics. Here the perfume cannot vaporize freely by dissipating into the air from the body heat as rapidly as it does in practical use. Rather, it is forcibly kept on the skin in closed quarters, under the patch, for a long time, in its original concentration. Moreover it is thereby warmed by the skin temperature, which renders it still more active in its dermatological effect.

Pitfalls in Wrong Interpretations of Test Results

Judging the usability of a perfume or perfumed item merely on the strength of a positive patch test would be, in my opinion, similar to rejecting, for instance, the use of common table salt for human consumption, simply because a small quantity of undissolved salt, swallowed at once in dry powder form and and not in solution, would badly irritate the walls of the stomach. In both tests the conditions are unnatural, as compared with regular use. Creation of reasonable test conditions is just as important as reasonable interpretation of test results, to avoid apparent pitfalls in perfumery, specifically in creative perfume work. It may be unnecessary to emphasize at this point that the experienced perfumer, in the course of the years, acquires a high degree of familiarity with the behavior of all ingredients he uses in his profession and with their possible effect in various concentrations, as well as with the fact—often overlooked—that skin reactions caused by perfume materials as a rule belong in the category of allergic hypersensitvity, rather than in that of primary irritation. One of the best known dermatologists once made the statement that allergies to practically every known substance have been found to exist in individuals, whether applied topically or taken internally. Infants can even be allergic to milk.

The testing of perfumed items for chemical, color, and odor stability by continuous storage in an incubator at 45° C., which is frequent in cosmetic laboratories, is another practice apt to lead to pitfalls in perfumery. Such testing was introduced on wishful thinking, rather than as the result of familiarity with the properties of perfumes and perfume raw materials. In such an incubator test, a change of a few de-

grees in temperature may well mean the difference between passing the test and perfume destruction. It cannot be emphasized enough for those unfamiliar with composition of fragrances, that perfumes, and particularly all materials of *natural* origin contained therein, are complex blends of many tender and quite reactive organic chemicals that deteriorate readily, and have limited stability in heat, light, and oxidation, and that they must be treated, packed, stored, shipped, and used with this in mind. Only then will the inherent pitfalls and certain disappointment be avoided.

Pitfalls in Light and Heat Sensitivity of Raw Materials

The light and heat sensitivity of 30 of the most commonly used essential oils—such as bergamot, lemon, orange, petigrain, and vetivert—as well as common aromatic chemicals was tested by exposure to sunlight four hours a day in June in full, closed glass vials over a period of four weeks. Another set of the oils was kept in storage away from daylight at room temperature over the same period; and a third set was exposed to 37° C. in an incubator for the same four weeks. Color readings were taken on the Klett-Summerson Colorimeter before and after four weeks of exposure. The result of these tests was that all oils, without any exception, discolored and showed far higher color readings after the four weeks had elapsed. Some typical average figures will give you a picture of the magnitude of the changes that occurred. The color reading at start of test was 5; after four weeks of storage at room temperature, away from light, 15; after four weeks in an incubator at 37° C., 230; and after four weeks of exposure to sunlight for four house a day, 380. These are average figures, but they speak for themselves.

Pitfalls in the Nature of Perfumed Media

While the foregoing has served to point up some of the many possible pitfalls in the perfumer's daily work, the dangers of pitfalls in practical applications of perfumery are greater when perfuming decisions on finished items are undertaken by nonperfumers. And this is so especially when a perfume compound that has proved suitable for perfuming one particular cosmetic or toiletries item is incorporated in a medium of different physico-chemical composition, yet is expected to do the same perfuming job in the latter without the necessary adaptation of the composition by the perfumer. I certainly need not tell you that due to the vastly different physico-chemical conditions prevailing in the different items of a cosmetic or toiletries line, it can hardly be expected that the odor impressions received from each will and can be identical, if one and the same perfume compound is used for perfuming all these widely different media without a change in perfume structure or composition.[2] It is evident that the build-up and composition of a perfume must in most instances vary with the

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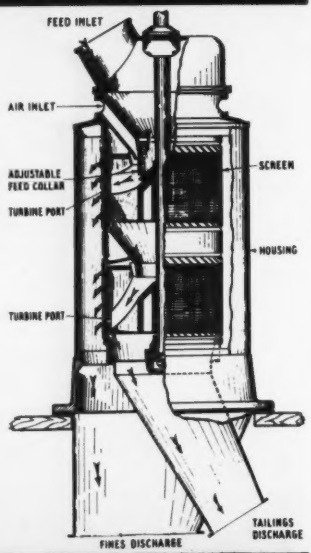

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medium, the desired odor effect for the particular item, price considerations, and other pertinent facts. In fact, the number of different perfume formulas giving the same, or nearly the same type of odor effect in the various items of a toiletries or cosmetic line can be nearly as large as the number of items in the line itself.

Pitfalls in Changing Perfume Concentration

The probability of a pitfall in perfumery also exists when a variation of perfume *concentration* is made in a perfumed item. When a perfume compound has a satisfactory odor impression in a certain established concentration, for example, four ounces of perfume oil per gallon of toilet water, and the concentration of perfume is changed, the number of vaporized odor particles hitting the odor receptors in the nose per time unit will differ, thereby creating different, and in most cases, less acceptable odor impressions, simply due to under- or overconcentration of odor particles.

The meaning of the word "to change" is remembered best in perfumery not as "to vary" or "to modify," but rather, possibly to cause a perfected yet delicate odor structure to collapse entirely.

Summary

Pitfalls in perfumery belong to one of the following three types: those due to lack of knowledge; those due to negligence or inaccuracy; and those due to unknown factors. This may sound complicated and discouraging, particularly to those about to choose this profession. It is certainly not meant to be. For, by his knowledge, skill, and experience, the perfumer has produced many odor concoctions that have been well received by trade and consuming public, in spite of existing limitations. And we will continue to present to the world many more marketable, although not completely foolproof, perfume creations. I should like to conclude, with apologies to Shakespeare in "The Merchant of Venice," by exclaiming, "Mislike me not for my concoction."

REFERENCES

1. Greenberg and Lester. 1954. Handbook of Cosmetic Materials. Interscience Publishers. New York, N. Y.
2. Marton, Oliver. 1955. Perfume problems due to physical structure of materials. First Open Symposium. The American Society of Perfumers.

DIABETIC DRUGS

(*Continued from page 615*)

turns in attacking various points in Dr. Dolger's testimony, but Dr. Dolger refused to retreat from anything he had said.

This ridiculous procedure of having reputable doctors engage in a violent dispute concerning the merits of a drug before a Senate committee that is supposed to be investigating prices and possible instances of monopoly was too much for Senator Everett D. Dirkson, minority leader. He refused to let the committee

have the necessary unanimous consent to resume the following day, while the Senate was in session. Peter Chumbris, a staff lawyer for the Republican members of the committee, suggested at one point that the public wrangle among the doctors could "scare the daylights" out of the 60,000 diabetic patients for whom Diabinese was prescribed.

In looking up some earlier reports of Dr. Dolger in his experience with Orinase, your editor found that he also reported some deaths. However, he explained that these were due to coronary conditions and therefore not related to the taking of the drug.

On the day following this testimony, Mr. McKeen wrote to Senator Kefauver as follows:

"We wish to cooperate in every way to achieve full consideration of the matters which the Subcommittee orginally set out to explore, but after what happened in the Committee Room yesterday afternoon, with discussions centering around differences among doctors as to which drug they prefer, or why they thought one was better than another—or how they valued the efficacy and safety of our drug—I seriously wonder whether the hearings have not gotten into an area where they do not intend to be or properly belong.

"In order to eliminate this kind of technical discussion among doctors from the hearing room, I heartily endorse a suggestion made by Dr. Alexander Marble in his testimony before your Committee yesterday afternoon, in which he proposed a forum for scientific and objective review of the medical aspects of the oral antidiabetic drugs."

Mr. McKeen went on to promise full cooperation in such a symposium and the advantages that would accrue from it.

However, we seriously doubt that Senator Kefauver and his cohorts are at all interested in promoting any such symposium. After all, such a meeting would not make headlines for him or his committee. Also, the staging of the medical dispute did not bring important headlines, as far we could see.

NARCOTICS ACT

(*Continued from page 614*)

drugs." In order to manufacture any drug in any class, the manufacturer must be "registered," and must obtain a license and a manufacturing quota for the drug. Possession of a license to produce a drug of one class does not entitle a manufacturer to make a drug of another class.

In order to produce for general medical distribution a drug that is not covered by one of these classes, the manufacturer must petition for the creation of a new class by the Commissioner. Procedures are provided for creation of new classes, including the establishment of criteria that the drug must meet in order to justify manufacture. •

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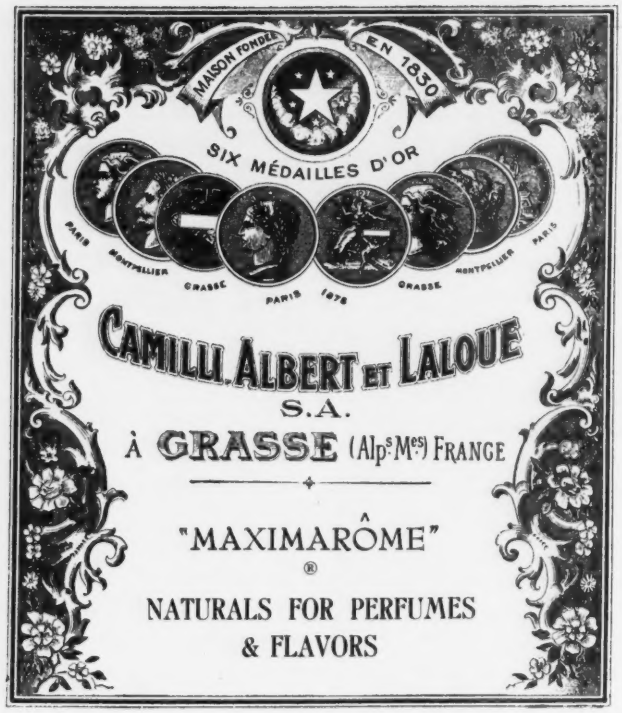

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